MEMOIRS OF THE HOURGLASS CRUISES

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RATIONALE AND PERTINENT DATA

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ABSTRACT

This paper describes in detail the rationale, cruise patterns, stations, gear, sampling procedures, and methods of specimen handling, and presents all the hydrographic data accumulated during the 28 months of the Hourglass program (August 1965 – November 1967). The Hourglass cruises were conducted by the Marine Research Laboratory of the Florida Board of Conservation and represent one of the few major systematic biological sampling programs undertaken on the continental shelf of the Gulf of Mexico.

Volume I, Part I is the first in a new series of Laboratory publications which will deal with results obtained from the Hourglass program. This issue is designed to make the basic data available and to eliminate needless repetition in succeeding volumes.

INTRODUCTION

Historically, the major oceanic explorations have endeavored to sample the largest possible area with a variety of gear. The "Challenger" expedition, one of the earliest and most important of the oceanic explorations, is an excellent example. This three-and-one-half-year cruise covered approximately 69,000 miles in the Pacific, Atlantic, and Antarctic Oceans, gathering such quantities of specimens and data that the published results fill approximately 50 large volumes. An excellent capsule history of oceanic exploration in the Gulf of Mexico is presented by Paul S. Galtsoff in the *U.S. Fish and Wildlife Services* Bulletin 89 entitled "Gulf of Mexico, Its Origin, Waters, and Marine Life" (1954).

In spite of their importance, cruises of exploration are generally one-time efforts. Different areas are studied during each cruise and stations are usually sampled only once, often randomly, and sometimes without regard for continuity or relationship to other areas.

As our demands upon the seas increase, our need for detailed information on the life history and ecology of marine organisms becomes more acute. This essential information can be obtained only through systematic sampling, briefly defined as the sampling of fixed locations, with the same gear, at specific intervals. This method is frequently used in easily accessible inshore or shallow-water areas. Such sampling provides data that can be evaluated in a variety of ways, limited only by the imagination of the investigators. Based on these evaluations it is possible to obtain extensive biological information for any species under study, including seasonality, population abundance, spawning frequency and times, nocturnal and diurnal periodicity, seasonal depth ranges, growth rates, feeding habits, and many others.

Contribution No. 125

Effective July 1, 1969, while this paper was in press, agencies of the State of Florida underwent legislative reorganization and the Florida Board of Conservation was renamed the Florida Department of Natural Resources. Similarly, the former Division of Salt Water Fisheries became the Division of Marine Resources. These names should consequently be considered synonymous in this publication.

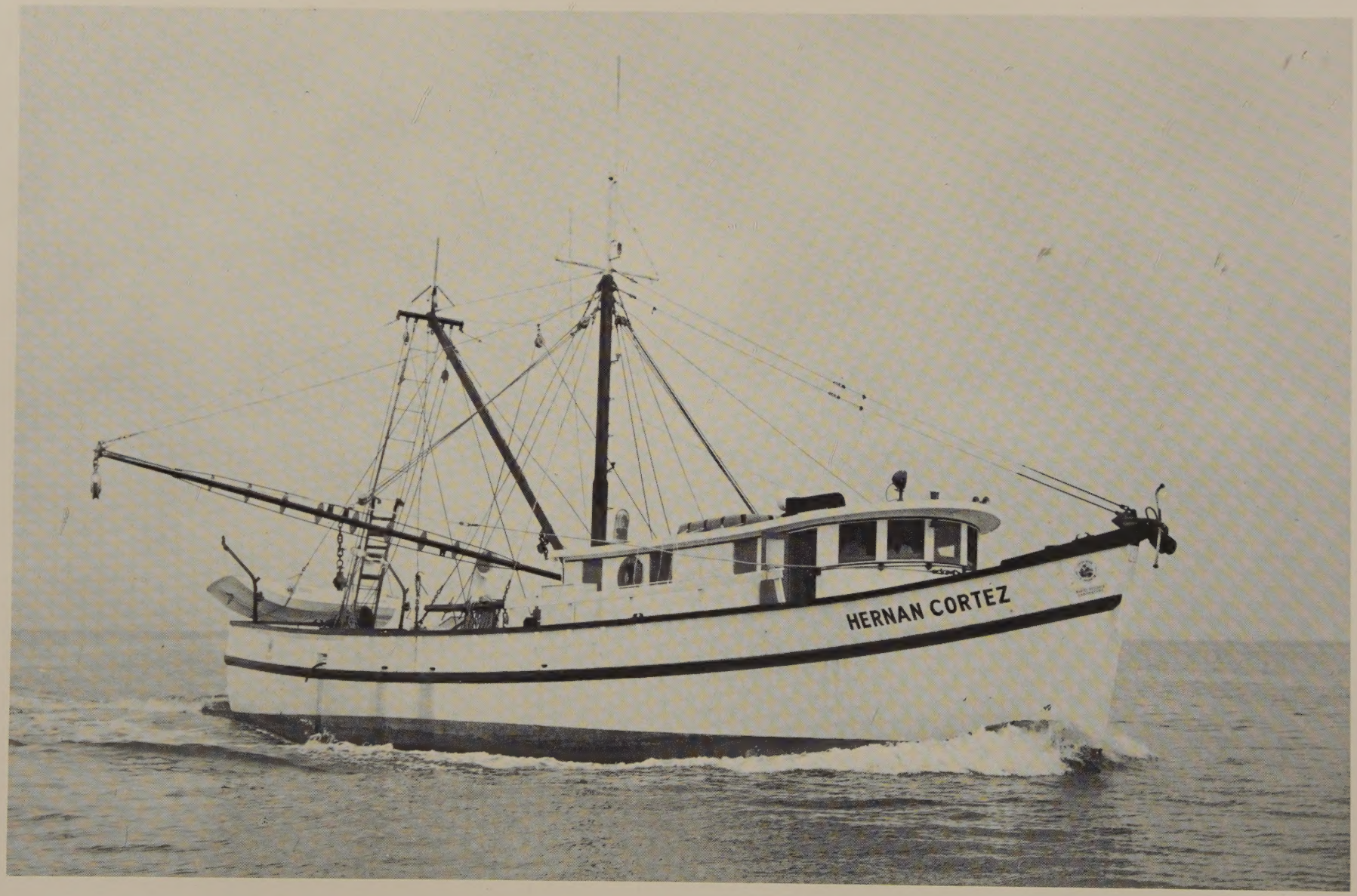


Figure 1. The R/V *Hernan Cortez*

The systematic sampling program of Project Hourglass was designed to meet the needs for extensive biological information on organisms in the offshore waters of the Gulf of Mexico.

ACKNOWLEDGMENTS

A major sampling program of this type must have a dependable offshore research vessel. This need was more than fulfilled by a donation from L. C. Ringhaver, President, Diesel Engine Sales Company of St. Augustine, Florida. In June of 1964 Mr. Ringhaver presented to the Florida Board of Conservation Marine Laboratory a new, completely equipped 72-foot shrimp trawler (christened the R/V *Hernan Cortez*), to be used explicitly for the advancement of marine research (Figure 1). No other person can claim a greater contribution to the success of Project Hourglass and our deep appreciation for such a gift cannot be adequately expressed.

Sincerest thanks are due Marine Captain Earl W. Girard and Boat Biologist Robert F. Presley whose participation in cruises throughout the Hourglass program is indicative of their interest and ability. We also wish to thank all of the Laboratory staff, both past and present, who have assisted as additional ship's crew members.

Dr. Frank J. Maturo, Jr., University of Florida, Gainesville, made identifications of important bryozoans. Mr. T. Peter Lowe, U.S. National Museum, Washington, D.C., provided verification of our stony coral identifications. We also wish to thank Dr. Victor G. Springer, U.S. National Museum, Washington, D.C., and Dr. Harold H. Humm, University of South Florida, Tampa, who critically reviewed this manuscript, and Mr. James A. Moore of the Laboratory staff who prepared the drawing for Figure 2.

In a series of studies of the scope and duration of Project Hourglass, the people who have given of their knowledge, time, and experience are too numerous to mention individually. We of the Marine Laboratory offer our thanks to all these people and hope that they will see in the results of our work, the magnitude of our indebtedness to them.

METHODS AND MATERIALS

The Hourglass program was designed to continue for at least two years to provide samples for the Fisheries Division (dealing with studies of commercial and potentially commercial species) and the Red Tide Division (dealing with the study of Florida's Red Tide and related water chemistry) of the Marine Laboratory. The preliminary cruise plan called for an hourglass pattern (Figure 2) with fishery stations to be located west of Egmont Key and Sanibel Island at depths of 20, 60, 120, 180, and 300 feet. The red tide stations were to be located on the inshore side of this pattern. The first Hourglass cruise (R/V *Hernan Cortez* No. 18) in August of 1965 was planned as a trial run, during which unforeseen difficulties could be corrected and necessary changes made. The remainder of the sampling program would then be consistent.

Two changes in the basic plan were found to be necessary. The deepest fishery stations (E and M) were changed from 300 to 240 feet because of difficulties in sampling at the greater depth. This changed the relative position of three red tide stations, moving them somewhat closer to shore. Sampling during HC 18 also indicated that night catches at fishery stations were generally larger and contained a greater variety of species than did daytime samples. Consequently, future Hourglass cruises were scheduled to permit night sampling of all fishery stations possible.

Towing speed for smaller sampling gear was approximately two knots (800 RPM from a 300 horsepower D-343 Caterpillar engine turning a standard shrimp trawler propeller). Towing speed on the larger gear (45-foot balloon-type otter trawl) was also about two knots but engine RPM was increased to 1250 to offset the greater drag of this gear.

MONTHLY CRUISE SCHEDULE

The research vessel R/V *Hernan Cortez* was scheduled to depart on the Hourglass cruise at approximately 2:00 PM on the first day of each month. Fishery Stations A, B, C, D, and E (20, 60,

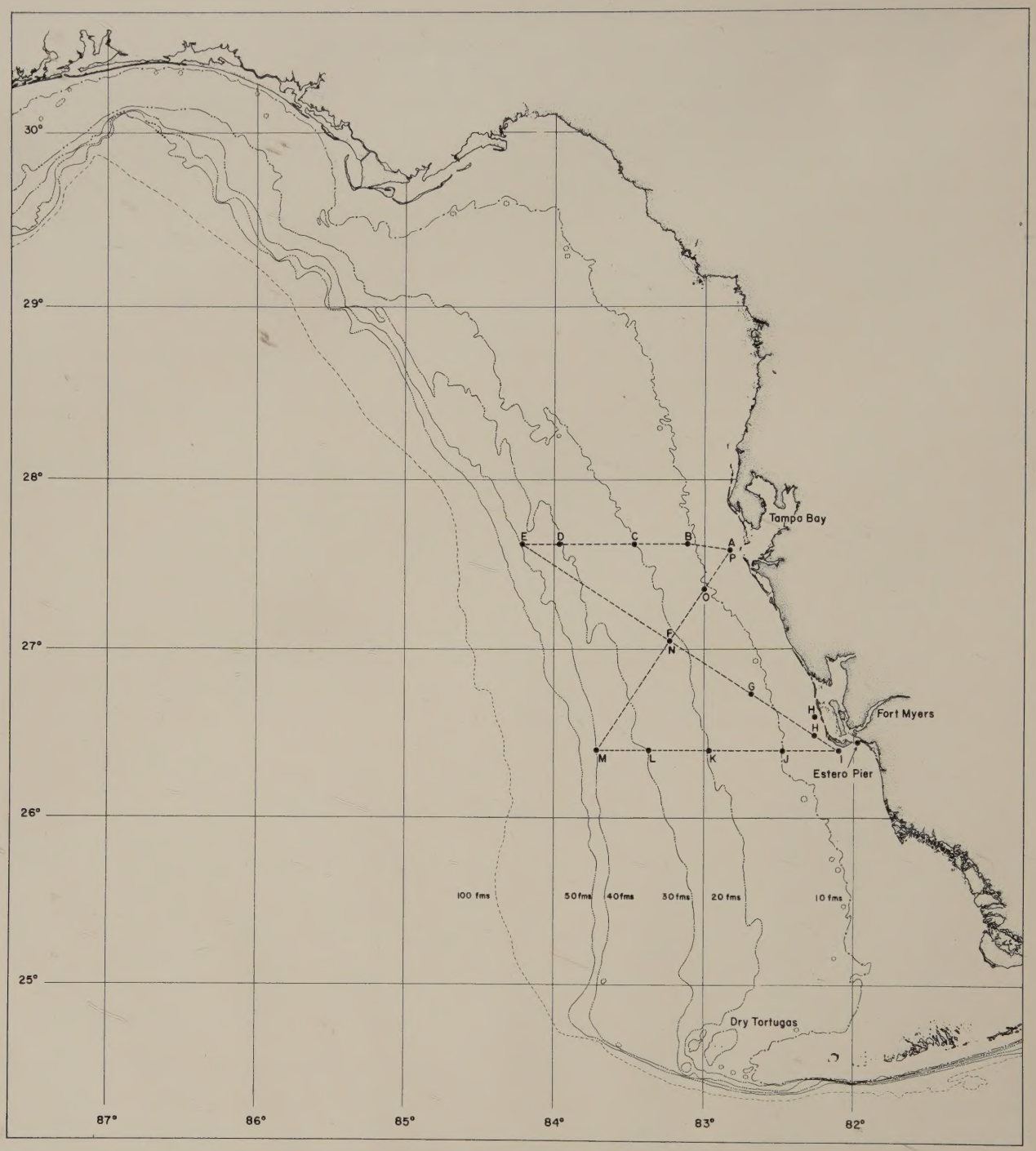


Figure 2. Hourglass cruise pattern and station locations.

120, 180, and 240 foot depths) were sampled throughout the night with Station E usually being completed just before dawn. When short summer nights prevented all fishery stations from being taken at night, the shallowest were taken in late afternoon or early evening. After leaving Station E, the R/V *Hernan Cortez* proceeded toward Ft. Myers. Upon reaching the intersect point of the hourglass figure (Stations F/N) the vessel was anchored for the night. When weather permitted, trapping and night-lighting were conducted while at anchor. At dawn, Red Tide Station F was sampled and the vessel continued toward Ft. Myers, taking samples at Red Tide Stations G and H en route. An additional phytoplankton sample was collected west of Estero Pier.

All living phytoplankton samples were picked up when the vessel reached Ft. Myers and were transported to the St. Petersburg Laboratory for immediate processing.

The R/V *Hernan Cortez* remained in Ft. Myers for two nights while the crew made necessary repairs, rested, and restocked for the second leg of the cruise. The vessel left Ft. Myers about 2:00 PM and sampled Fishery Stations I, J, K, L, and M, located due west of Sanibel Island in 20, 60, 120, 180, and 240 foot depths. The R/V *Hernan Cortez* then turned toward St. Petersburg and proceeded to the intersect point of the hourglass pattern (Stations F/N) and was anchored for the night. Again traps were set and night-lighting was conducted when feasible. The next morning Red Tide Stations N, O, and P were sampled as the vessel proceeded to St. Petersburg.

The entire trip required six days under optimal conditions. Weather sometimes caused departure delays or other scheduling changes but no cruises were forfeited. During Cruises HC 22 and 25 (December 1965 and March 1966) sampling on the southern leg was interrupted when weather forced the vessel's return to Ft. Myers. Consequently, Station L on HC 22 and Stations I, J and K on HC 25 were sampled twice during these months.

On Cruise HC 27 (May 1966) an unfortunate incident occurred as the R/V *Hernan Cortez* was returning to St. Petersburg after completion of fishery station sampling. A sudden squall and resultant rough water caused the vessel to pitch rapidly to one side, upsetting a large number of the samples. Several of the containers broke open and the contents undoubtedly became mixed, although efforts were made to avoid this. Consequently, a complete analysis of these samples will not be attempted but the samples have been retained and are available for use when applicable.

POST-CRUISE

To investigate the preliminary indication that night catches were larger and more varied than day catches, a second monthly cruise (Post HC) was usually conducted after each Hourglass cruise. Fishery Stations B, C, and D were sampled on the post-cruise, but the collections were made as near noon as possible.

Certain species taken during previous studies had shown some commercial potential by virtue of their size and abundance. Since some of the most promising of these species were susceptible to trap fishing, the remainder of the post-cruise was largely devoted to exploratory trapping. Trawling, long-lining, hand-lining, night-lighting, and red tide sampling were also performed as weather conditions permitted and laboratory requirements dictated.

The post-cruises required from two to five days, depending on the weather, distance to the trapping area, and the number and type of samples to be taken.

SUPPLEMENTARY CRUISES

Because of the slow towing speed and the relatively small size of the trynet (see *Gear*) being utilized on the fishery stations, it appeared probable that some of the faster swimming fishes and invertebrates might not be well represented in the catch. To investigate this possibility, a supplementary cruise was designed to sample only the fisheries stations, utilizing a 45-foot balloon-type otter trawl. No other biological sampling gear was used. Two such cruises were made during the Hourglass study period, one in July 1966 (Sup. HC 29) and one in January 1967 (Sup. HC 35). These cruises were made after the regular monthly cruises and were spaced six months apart to provide material for seasonal comparison.

GEAR AND METHODS OF USE

A. Trynet

During the first 13 months of the Hourglass cruises (August 1965 through September 1966) a standard 20-foot (measured from door to door) flat trynet with two-inch stretched mesh (Figure 3) was used at each fishery station. A 15-minute towing time (on the bottom) was tried during the first

Figure 3. Twenty-foot flat trynet.

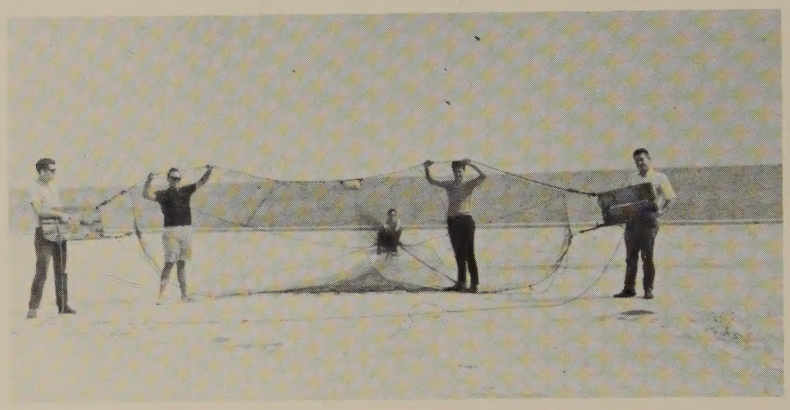


Figure 4. Twenty-foot balloon-type trynet.

half of HC 18 (August 1965) but was found to be insufficient. The trynet was pulled for 30 minutes on the remainder of HC 18 and on all subsequent cruises.

This trynet was also used on the post-cruise daytime sampling of Stations B, C, and D during the same 13-month period. Additional use of this gear was limited and random.

During the remaining 15 months of the Hourglass cruises a standard 20-foot balloon-type trynet with two-inch stretched mesh (Figure 4) was employed in the manner described above. The nets were changed to provide a rough comparison of the catches and efficiency of these two types of equipment used in the fishing industry. (During HC 43, September 1967, extensive damage to the balloon-type trynet occurred at Station C. Consequently, the flat trynet was used for the remainder of this cruise. The balloon-type trynet was replaced prior to Post HC 43.)

B. Dredge or Scrape (Figure 5)

The gear utilized during the study to sample sedentary and bottom organisms was a heavy steel box-type dredge or scrape 13 inches high, 36 inches wide, and 30 inches deep (inside measurements), lined with 3/4 by 1 1/2-inch expanded metal. The dredge was pulled on the bottom for 15 minutes at each fishery station. It was also used at Stations B, C, and D during the post-cruises.

C. Plankton Net (Figure 6)

A one-half meter (ring diameter) 175μ mesh nylon plankton net, with a one-quart bottle on the cod end, was utilized throughout the Hourglass program. A step oblique tow of 30 minutes (ten minutes at bottom, ten at middepth, and ten at surface) was made at each fishery station and on the daylight samples of the post-crusies. In addition, a 15-minute step oblique tow (five minutes at bottom, five at middepth, and five at surface) was made at each red tide station with the same net but with a one-pint bottle on the cod end. This short plankton tow was initiated in January 1966 to supplement the living phytoplankton samples and was especially important for collecting armored dinoflagellates.

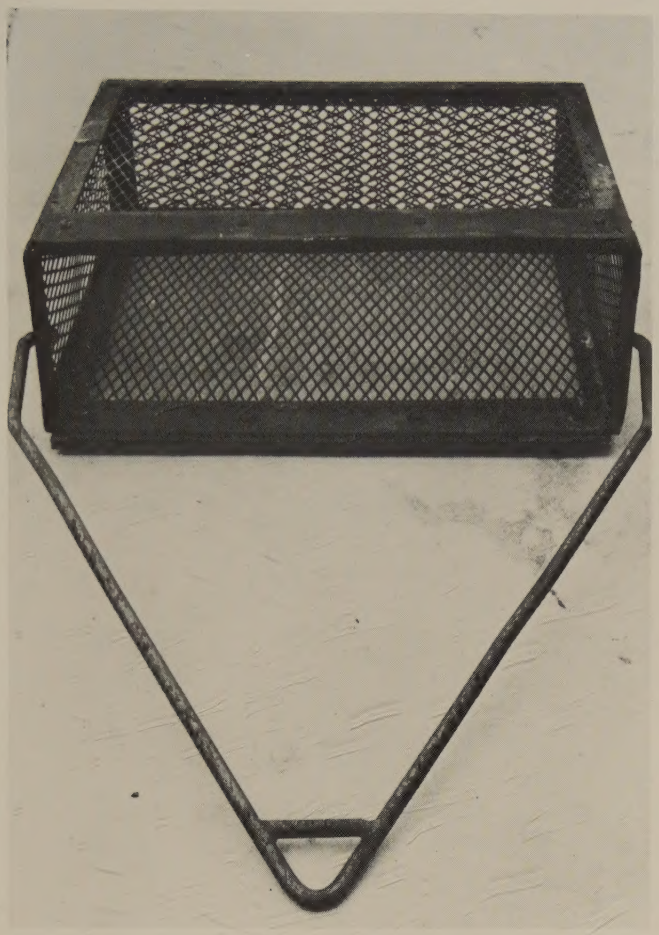


Figure 5. Rectangular box dredge (scrape).

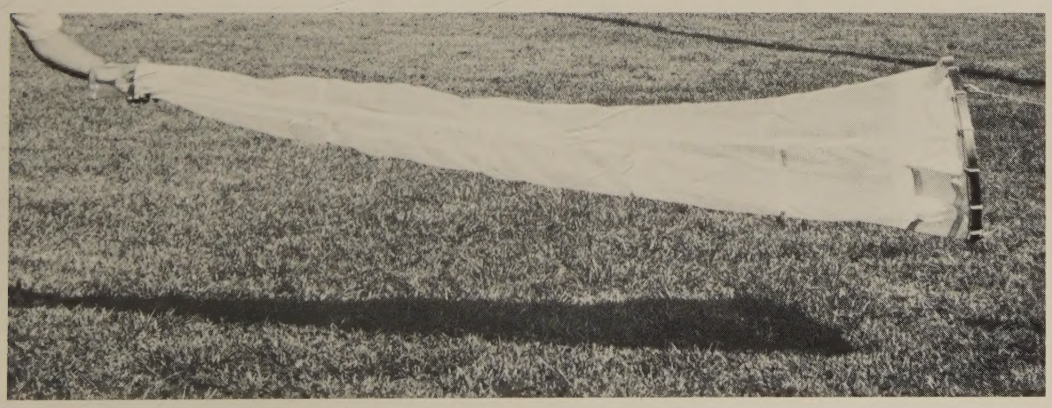


Figure 6. One-half meter plankton net.

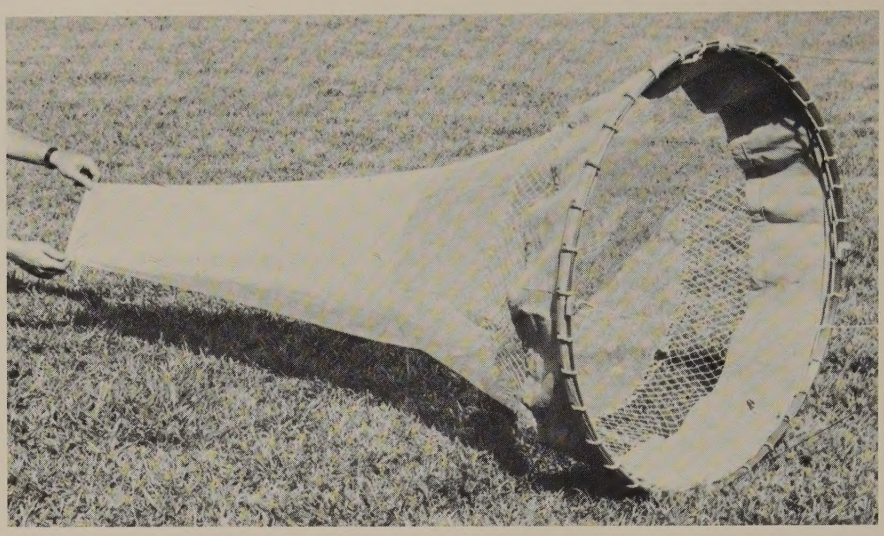


Figure 7. One meter nekton net.

D. Nekton Net (Figure 7)

Preliminary examination of plankton catches indicated a paucity of the larger, more active members of the plankton, especially juvenile fishes. In an effort to improve collection of these groups, a surface nekton tow was initiated in October 1966. The one-meter nekton net (seven feet in length) is constructed of three sizes of netting which decrease toward the cod end; 7 1/2 inches of 1 1/2-inch shark netting attached to canvas at ring end; 18 inches of 3/8-inch shark netting; and 50 inches of 1/8-inch ace netting at cod end. This net was used only at Fishery Stations B, C, and D on the Hourglass and Post Hourglass cruises and was towed for 30 minutes at each station.

E. 45-foot Balloon-type Otter Trawl

This net is of the same design as the balloon-trynet except that it measures 45 feet from door to door. It was used on the supplementary cruises and occasionally near trapping stations during the post-cruises.

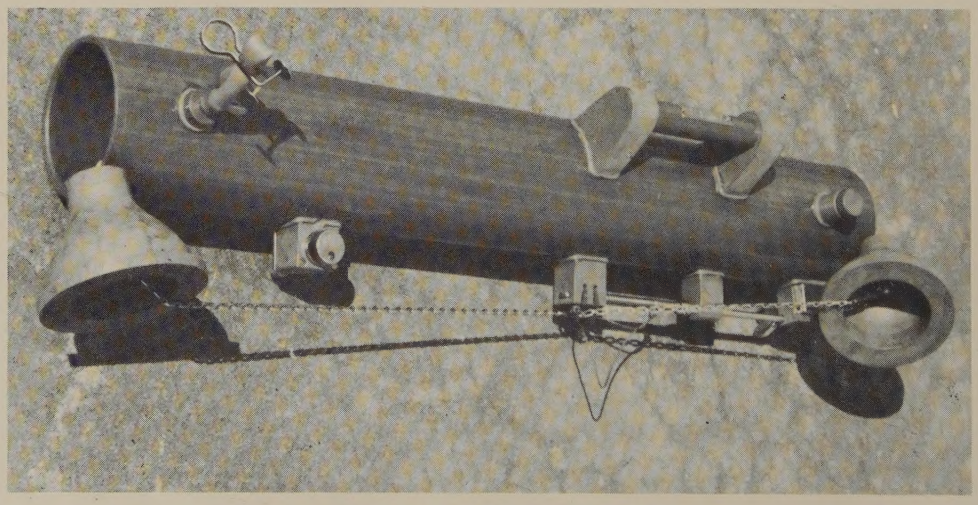


Figure 8. Van Dorn water sampler.

F. Van Dorn Water Sampler (Figure 8)

An eight-liter Van Dorn water sampler was used to take all middepth and bottom water samples required on Hourglass and related cruises. Surface water samples were taken with a polyethylene bucket. Surface and bottom water samples were taken on fishery stations; surface, middepth, and bottom water samples were taken on red tide stations. Water samples were used for temperature

(measured immediately aboard vessel) and salinity determinations, miscellaneous chemical analyses, and phytoplankton examinations. All salinities, unless otherwise noted, were determined by Mohr titrations performed at the St. Petersburg Laboratory.

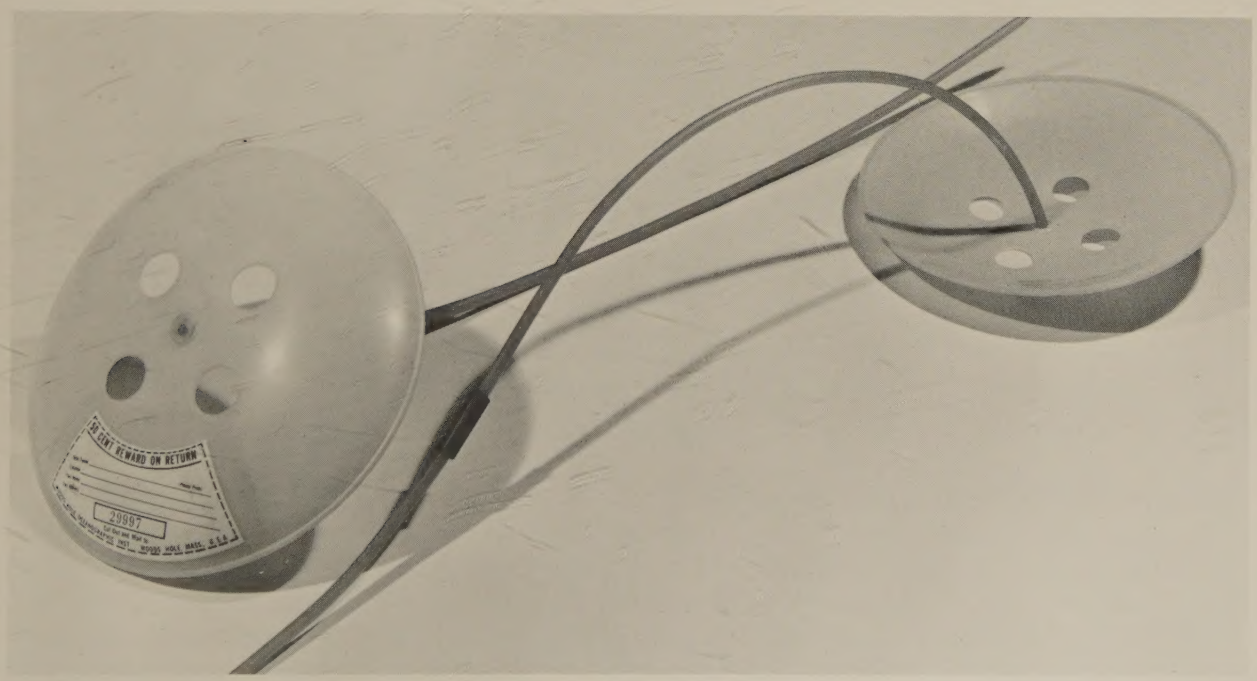


Figure 9. Current drifters: drift bottle and return postcard; seabed drifters.

G. Current Drifters (Figure 9)

Ten eight-ounce glass drift bottles were released at each Hourglass station (fishery and red tide) throughout the 28-month study. These unweighted bottles floated low on the water and contained a self-addressed, postage-paid postcard which requested the finder to fill in needed recovery data and mail to the Marine Laboratory. No reward was offered.

Seabed drifters (disk diameter 180 mm) provided by the Woods Hole Oceanographic Institution were also released at each Hourglass station beginning in December 1965. Five drifters were released at each station throughout the remainder of Project Hourglass with the exception of November 1966 and May 1967 when no drifters were available. A 50-cent reward was offered for the return of the tag to the Woods Hole Oceanographic Institution.

H. Secchi Disk

Beginning in December 1965, Secchi disk readings were taken at all stations to give a rough indication of water clarity.

I. Night-light Sampling

This procedure utilized a bright, powerful light suspended a few feet above the surface of the water at night. A long-handled fine-mesh dip net was then used to catch larvae and other nektonic forms that gathered under the light.

This method was quite successful in collecting small forms which are too fast to be taken in nekton or plankton nets. However, night-lighting could only be accomplished during periods of extremely calm weather while the boat was at anchor. Consequently, these samples were not numerous during the Hourglass studies.

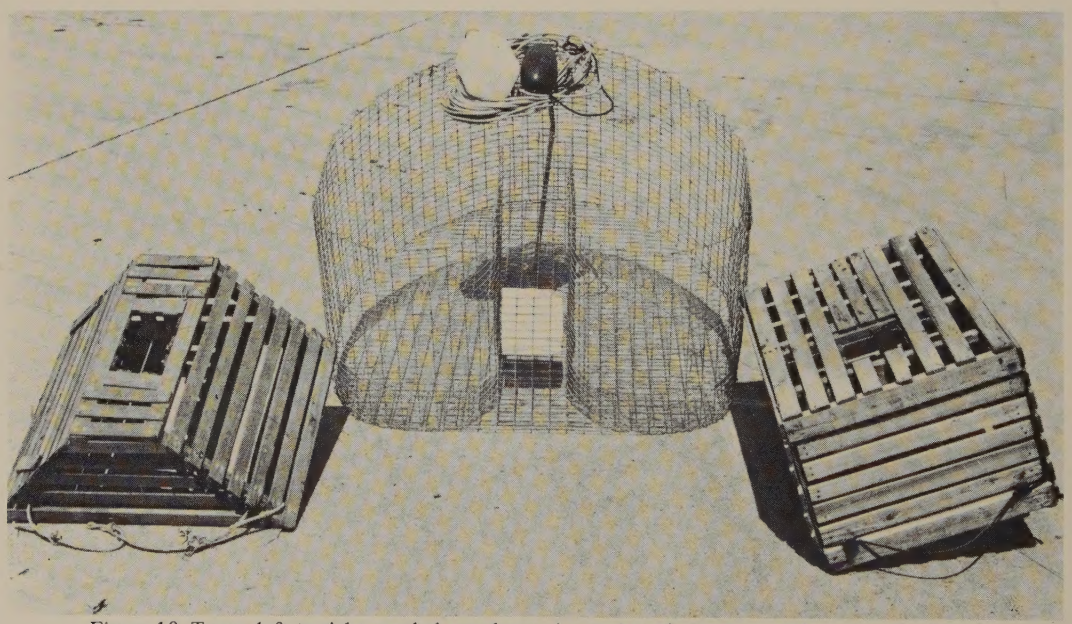


Figure 10. Traps: left to right—angled wood trap, heart-shaped wire trap, and square wood trap.

J. Traps (Figure 10)

The three types of traps shown in Figure 10 were used most often during the study. Several other trap designs were tested briefly but preliminary catches were poor and their use was discontinued. Most trapping was conducted on the post-cruises. All traps were baited and set alternately in a preselected area in the late afternoon or evening. The following morning all traps were pulled and the catches were recorded. The traps were then rebaited and set again, either at the same location or in another area.

Trapping was also accomplished on Hourglass Stations F/N when conditions permitted.

K. Fishing

Hand-line and long-line fishing were occasionally performed on Hourglass and related cruises. However, these methods were not part of the systematic sampling program and were generally used to obtain particular specimens needed by other projects at the Marine Laboratory. Data from these catches are not included in this report but will be included in later volumes, if pertinent.

L. Diving

SCUBA diving was accomplished at the shallow Fishery Stations A, B, C in July, and I, J, K in August 1967. Two-man teams descended at each station to make direct observations, photograph the area, take substrate samples for particle analysis, and make selected collections when possible. These observations were especially beneficial in the preliminary station descriptions.

SPECIMEN HANDLING AND PRESERVATION

A. Trynet, Dredge, Trawl, and Trap Samples

All samples were kept separate, carefully labeled, preserved in 10% seawater formaldehyde, and stored in large polyethylene containers on the boat. The entire sample was retained whenever possible; however, when large catches of certain species occurred, a representative sample was kept and the remainder was counted, measured (when possible), and discarded. When large sponges or other colonial animals were taken, a representative piece was retained and the rest recorded and discarded. In addition, at least a shovelful of substrate material and debris was usually preserved so that very small species might also be represented in the sample. On several occasions, all substrate and debris were retained for quantitative analysis of these very small forms.

The abdominal cavities of fishes over four to five inches long were opened to allow formaldehyde to reach the internal organs. Hypodermic injection of formaldehyde into the body cavity was later found to be a quicker and more efficient method and was generally used thereafter.

All samples were allowed to remain in the 10% formaldehyde at least 24 hours for fixation. This solution was then poured off, and the samples were rinsed in fresh water and sorted into fishes, invertebrates, and plants. The plants were then placed in fresh 10% formaldehyde for storage. The fish and invertebrate specimens were allowed to stand for an additional 24 hours in fresh water, after which they were rinsed again and placed in 40% isopropyl alcohol. Alcohol preservation greatly facilitated later examination of these specimens.

This general procedure was followed throughout the course of the project. However, in special instances, selected specimens were handled in a different manner dictated by specific requirement. For example, specimens were occasionally brought back alive to allow observations of natural color patterns or for other reasons. In all instances these animals or plants remained a part of the original sample and were included in the catch records for that station.

Although it is realized that these handling procedures were not optimum for all phyla encountered, the number, volume, and variety of the samples precluded individual handling.

B. Nekton, Plankton, and Night-light Samples

These samples were immediately preserved in approximately three to five percent seawater formaldehyde, labeled, and stored on the boat. Shortly after the samples were returned to the Laboratory, several marble chips were added to each container to buffer against the decomposition of formaldehyde into formic acid.

C. Phytoplankton Samples

Living phytoplankton (one-quart water samples) from Hourglass cruises were taken with the Van Dorn water sampler at specified depths. These samples were the last to be taken prior to making port. While on the boat, or when transportation (from the vessel at Ft. Myers to the Laboratory in St. Petersburg) was required, the phytoplankton samples were kept out of direct sunlight.

Enumeration and identification of phytoplankters, specifically diatoms and dinoflagellates, were recorded after the samples were received at the Laboratory.

DESCRIPTION OF STATIONS

This discussion of the Hourglass stations is not intended to be a thorough treatment, but rather a general indication of major characteristics. Detailed analyses of each station and its inhabitants will be slowly accumulated as the different phyla and lesser groups are analyzed and the results published in later editions of the *Memoirs*.

Loran readings and depth were the principal criteria used to locate stations on each successive cruise. Tidal effects, wind direction, wind velocity, and ocean currents undoubtedly affected the exact sampling pattern of each station. However, we believe a station accuracy of about one mile (probably less at near-shore stations) was maintained throughout the 28-month study.

Table 1 presents the latitude and longitude of each station, its location in respect to the nearest land area, and its established depth.

TABLE 1. LOCATION OF HOURGLASS STATIONS

Station	Latitude*	Longitude*	Established Depth ft.	Established Depth meters	Approximate Nautical Miles Offshore*
A	27°35'N	82°50'W	20	6.1	04-due W of Egmont Key
B	27°37'N	83°07'W	60	18.3	19-due W of Egmont Key
C	27°37'N	83°28'W	120	36.6	38-due W of Egmont Key
D	27°37'N	83°58'W	180	54.9	65-due W of Egmont Key
E	27°37'N	84°13'W	240	73.2	78-due W of Egmont Key
+F	27°03'N	83°14'W	128	39.0	42-due W of Venice
+G	26°44'N	82°41'W	78	23.8	22-due W of Gasparilla Island
+H	26°36'N	82°16'W	22	6.7	03-due W of Captiva Pass
I	26°24'N	82°06'W	20	6.1	04-due W of Sanibel Island Light
J	26°24'N	82°28'W	60	18.3	24-due W of Sanibel Island Light
K	26°24'N	82°58'W	120	36.6	51-due W of Sanibel Island Light
L	26°24'N	83°22'W	180	54.9	73-due W of Sanibel Island Light
M	26°24'N	83°43'W	240	73.2	92-due W of Sanibel Island Light
+N	27°03'N	83°14'W	128	39.0	42-due W of Venice
+O	27°19'N	83°00'W	78	23.8	21-due W of Longboat Key
+P	27°35'N	82°51'W	20	6.1	05-due W of Egmont Key

*U. S. Coast & Geodetic Chart 1003 dated June 1966
+Red Tide Stations

Fishery Stations

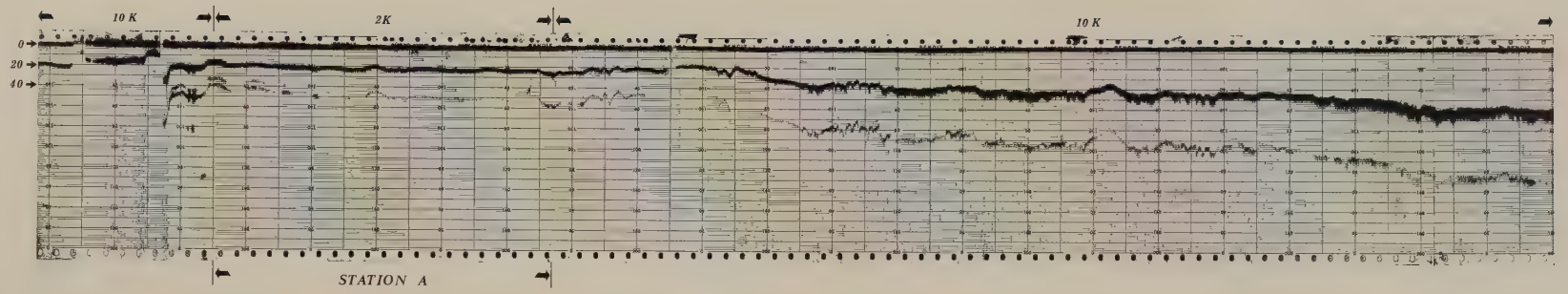
The north and south legs of the cruise (Fishery Stations A, B, C, D, E, and I, J, K, L, M) were designed to compare stations of similar depths at different latitudes and stations of similar latitude but different depths.

Preliminary findings indicate much greater similarities between stations of the same depth than between stations within the same latitude. Species composition at these stations was not necessarily identical, but apparently the factors influencing species occurrence were more dependent upon depth than upon the 01° 13' difference in latitude between the northern and southern legs of the cruise. Consequently, in the brief descriptions which follow, stations of the same depth are grouped to avoid needless repetition.

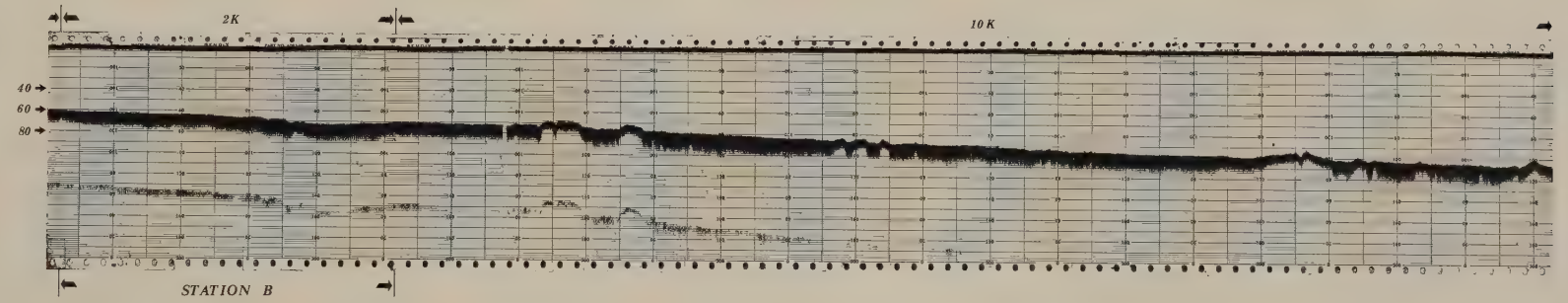
Divers examined six stations (A, B, C, I, J, and K) and their observations are included in the stations discussion. Table 2 presents the sediment paricle-sizes at these stations.

TABLE 2. SEDIMENT PARTICLE SIZES AT STATIONS A, B, C, I, J, AND K.

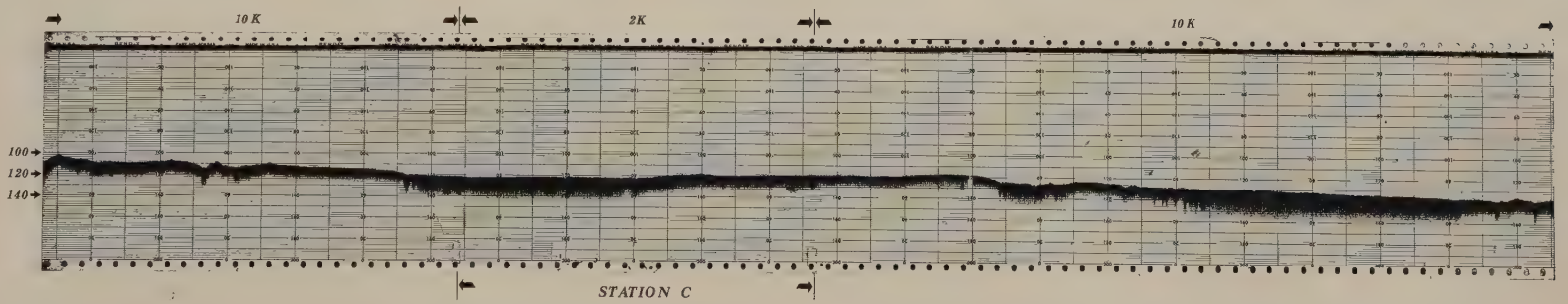
	A		B		C		I		J		K	
Size of mesh (μ)	Weight of material (grams)	% of total weight	Weight of material (grams)	% of total weight	Weight of material (grams)	% of total weight	Weight of material (grams)	% of total weight	Weight of material (grams)	% of total weight	Weight of material (grams)	% of total weight
4760	7.9	1.78	103.7	9.24	11.2	1.09	119.0	11.20	13.5	1.21	1.4	0.15
1680	36.6	8.27	105.4	9.39	50.7	4.93	237.4	22.34	30.8	2.76	4.6	0.48
1410	4.7	1.06	21.5	1.92	23.7	2.30	55.3	5.20	8.7	0.78	2.3	0.24
1000	12.2	2.76	63.8	5.69	119.9	11.66	170.6	16.05	38.9	3.49	8.6	0.90
590	13.2	2.98	110.1	9.81	351.5	34.17	208.0	19.57	120.2	10.77	31.4	3.29
420	9.7	2.19	133.4	11.89	237.4	23.08	77.7	7.31	221.2	19.21	31.2	3.27
250	66.3	14.98	284.8	25.38	160.7	15.62	54.8	5.16	480.3	43.03	139.3	14.61
177	219.1	49.50	197.4	17.59	26.2	2.55	30.0	2.82	152.1	13.63	342.7	35.95
125	52.0	11.75	55.7	4.96	9.4	0.91	28.8	2.71	23.3	2.09	130.9	13.73
44	20.2	4.56	43.3	3.86	32.1	3.12	76.1	7.16	25.0	2.24	233.7	24.52
catch pan	0.7	0.16	3.1	0.28	5.9	0.57	5.2	0.49	2.1	0.19	27.1	2.84
Total weight	442.6 grams		1122.2 grams		1028.7 grams		1062.9 grams		1116.1 grams		953.2 grams	



STATION A



STATION B



STATION C

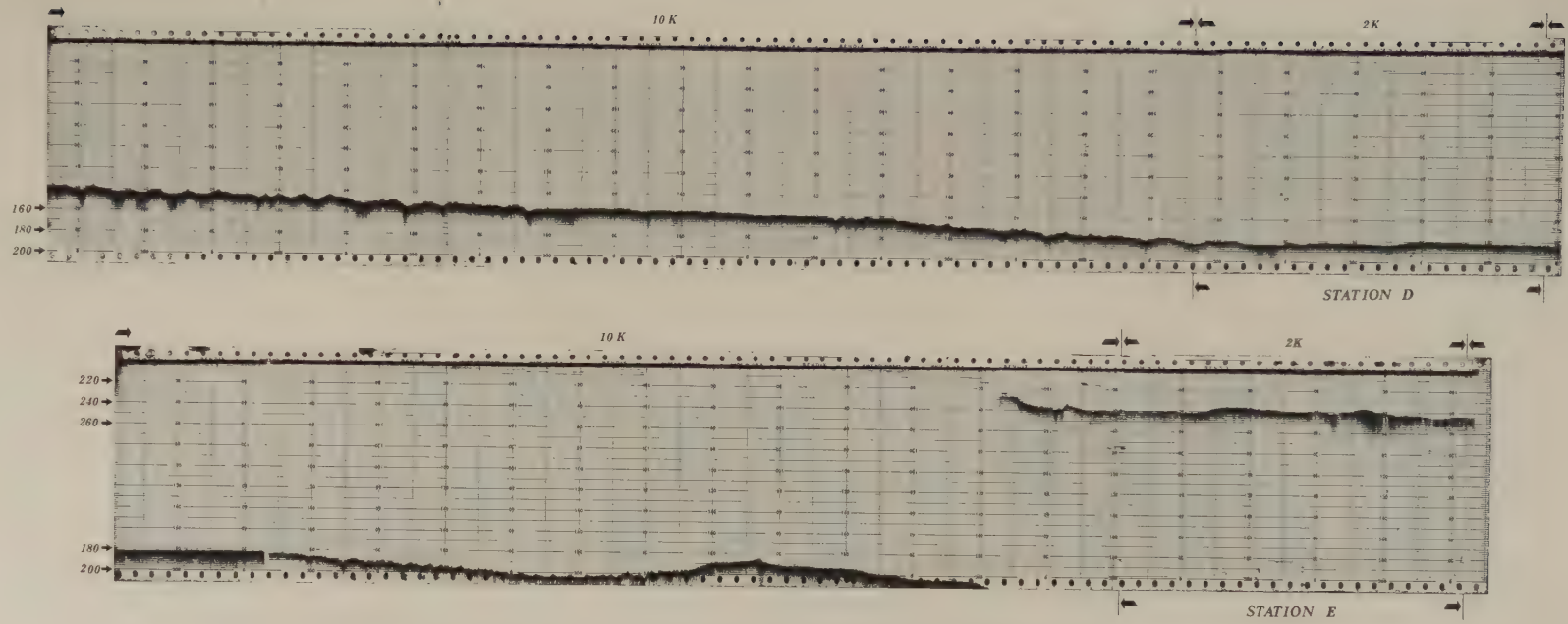
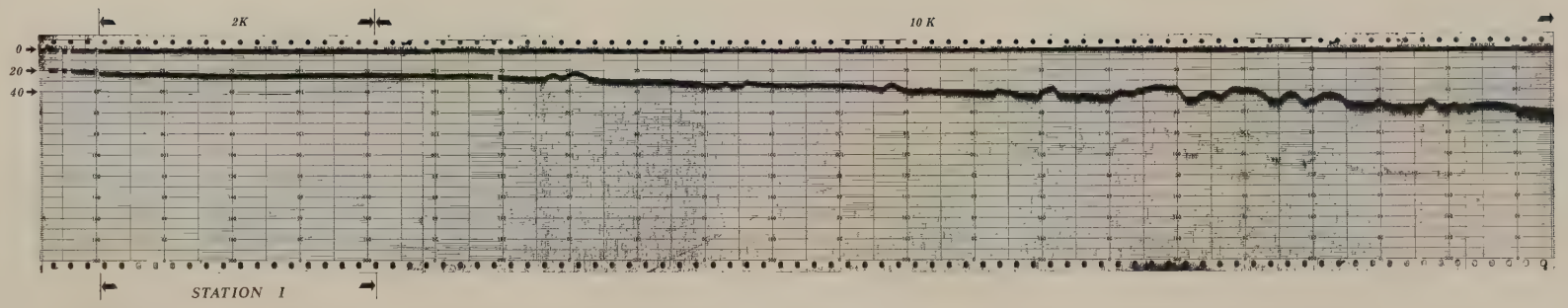
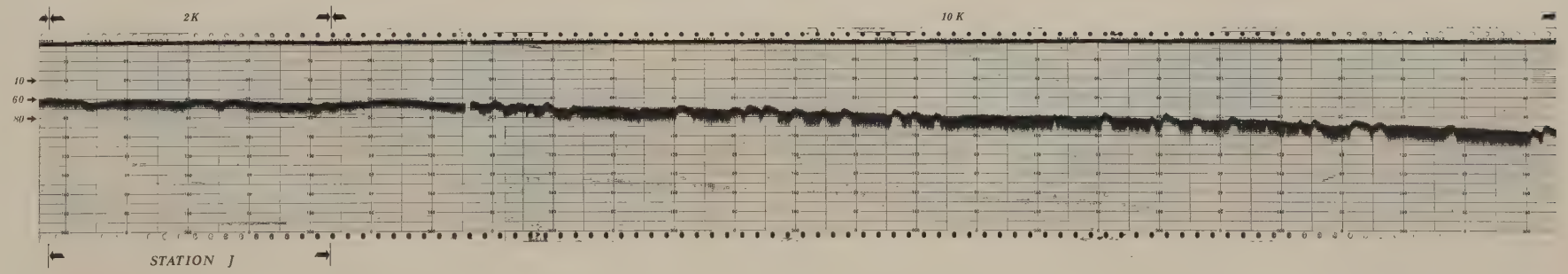
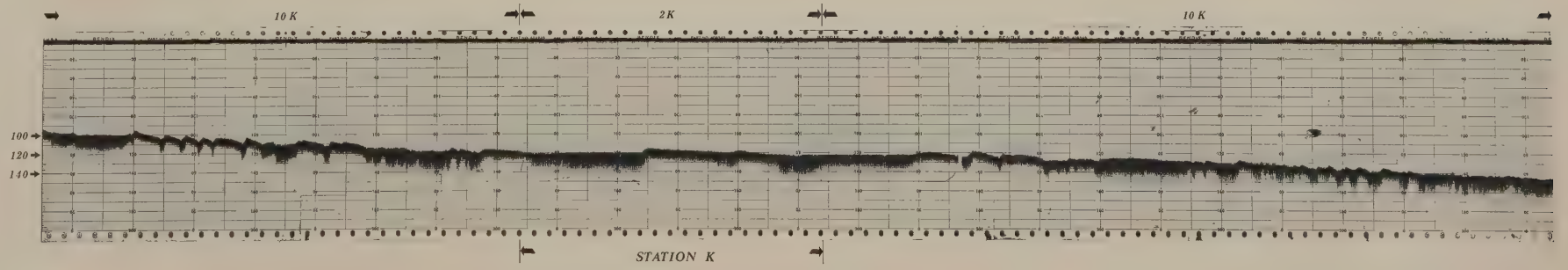


Figure 11. Fathometer profile of the bottom contour of the northern leg of the Hourglass pattern.

Breaks in profile line represent times when boat was stopped to take water samples; thickness of profile line gives indication of bottom hardness, thick lines representing softer areas; when depth exceeds 200 feet, profile line switches to second scale at top of graph (as seen prior to Station E).


2K
10 K
0
20
40
STATION I


2K
10 K
10
60
80
STATION J


10 K
2K
10 K
100
120
140
STATION K

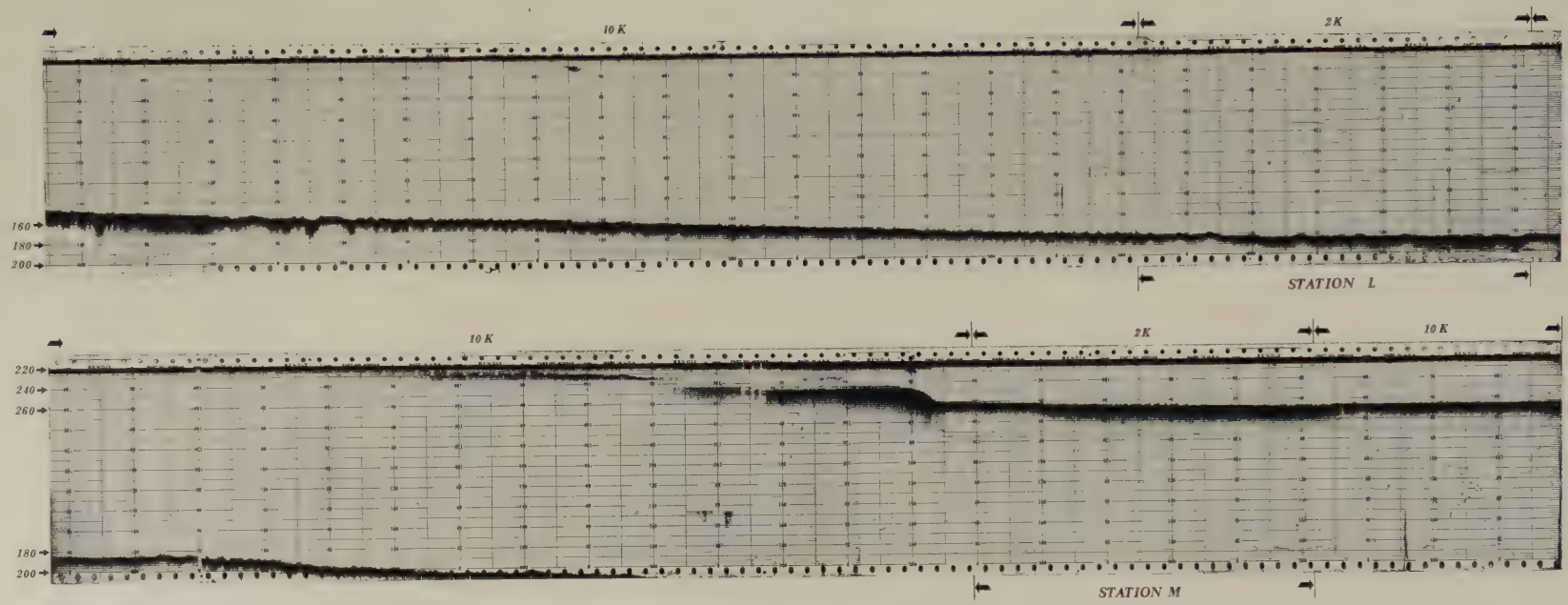


Figure 12. Fathometer profile of the bottom contour of the southern leg of the Hourglass pattern.

Breaks in profile line represent times when boat was stopped to take water samples; thickness of profile line gives indication of bottom hardness, thick lines representing softer areas; when depth exceeds 200 feet, profile line switches to second scale at top of graph (as seen prior to Station M).

Depths at all stations were determined with a Bendix Model DR9 fathometer. During the January 1967 Supplementary Cruise the fathometer was operated constantly for the entire north and south legs of the pattern to provide a depth profile of each azimuth (Figures 11 and 12).

Preliminary information is presented on some of the more common and conspicuous species making up the community. This is provided as a basis from which investigators may begin a detailed analysis of all species taken. A meaningful concept of the total community at each station can emerge only after these analyses have been completed.

Stations A & I (20 feet)

Located adjacent to Tampa Bay and west of San Carlos Bay, Stations A and I are strongly influenced by the estuarine nature of the bay systems. Consequently, a number of estuarine species are common to these stations. The bottom is primarily quartz sand and crushed shell, with a fine layer of silt. Hard substrate is limited to living and dead mollusks *(Atrina* sp., *Busycon* sp., and others) and provides meager attachment areas for a few sponges, hydroids, and barnacles.

Stations B & J (60 feet)

Abundant limestone outcroppings, occasionally reaching three feet above the bottom, characterize these stations. Sponges, alcyonarians, living stony corals *(Solenastrea hyades* and *Cladocora arbuscula),* and algae are abundant, forming a typical Gulf reef community. Smooth areas of shell and quartz sand between the limestone outcroppings are often covered with extensive growths of the green alga, *Caulerpa,* and the seagrass, *Halophila.*

Stations C & K (120 feet)

These were the deepest stations examined by divers. Limestone outcroppings are present but do not extend as high off the bottom as at Stations B and J. Numerous loggerhead sponges two to three feet in diameter were observed at Stations C and K. The brown alga *Sporochnus* sp. was very abundant and covered the entire area. The limestone areas are separated by relatively extensive sections of smooth bottom composed of crushed shell and other organically-derived calcium particles. The entire area is covered with a heavy layer of white calcareous silt. Relatively strong bottom currents occasionally stirred up this silt and hampered visibility during the diving operations. Although none were observed during the dives, living calcareous algae, *Lithothamnion* spp., occur at these stations and one dredge sample at Station K consisted almost entirely of these algae.

Stations D & L (180 feet)

No dives were accomplished on these stations, but fathometer readings and sampling gear operations indicated a generally smooth bottom with a few loggerhead sponges. Most of the prominent benthic species are bryozoans *(Steganoporella magnilabris* and *Hippopetraliella marginata)* and small sponges. The bottom, as determined from dredge samples, is composed primarily of crushed shell, *Lithothamnion* spp., and brown silt. Foraminifera tests are abundant at both stations.

Stations E & M (240 feet)

These stations are similar to Stations D and L. The bottom is characterized by bryozoans, calcareous algae, foraminifera tests, small sponges, and alcyonarians. The substrate is composed of crushed shell, dead bryozoans, and calcareous algae particles.

Red Tide Stations

Characterization of red tide stations is difficult since each station represents only the water mass present from surface to bottom at the location and time of sampling. Consequently, the following description of these stations is a brief comparison of their physical similarities. Preliminary findings indicate that similarities are greatest between stations of the same depth and these stations are grouped to avoid needless repetition. More precise comparisons must await complete analysis of all samples.

Stations F/N (120 feet)

Red Tide Station F, sampled on the first leg of the Hourglass cruise, and Red Tide Station N, sampled on the second leg, have identical locations at the intersect point of the Hourglass pattern. This duplicate station was sampled at different times and it was hoped that comparative analyses might reveal temporal changes occurring in the phytoplankton populations over a relatively short period (usually three to six days).

Stations F/N exhibit the narrowest range in temperature and salinity of the red tide stations. The physical stability of the environment is probably caused by the depth, distance offshore (42 nautical miles) and subsequent lessening of the effect of freshwater runoff from the land.

Stations G & O (78 feet)

Salinity and temperature data for the intermediate Stations G and O exhibited a wider range than Stations F/N but a somewhat narrower range than Station H and P.

Stations H & P (20-22 feet)

These nearshore stations exhibit the broadest range in temperature and salinity. The water masses are unstable and subject to relatively abrupt changes in both parameters. The number of species and the abundance of diatoms and dinoflagellates were greatest at these stations. This may be the result of higher nutrient value of the nearshore waters because of upwelling and/or freshwater runoff.

The location of Station H was changed from the original cruise pattern in February 1966 in order to sample nearer a previous red tide station off Captiva Pass (Table 15).

Estero Pier Station (Ft. Myers Beach: 26° 27'N, 81° 58'W; Depth 15')

Although this supplementary red tide station is not within the Hourglass pattern, a surface sample was taken each month, beginning in September 1966. This station, located approximately one mile west of the pier, was sampled as the R/V *Hernan Cortez* proceeded to the dock at Ft. Myers after completing the first leg of the Hourglass cruise.The physical characteristics of the station were indicative of its near-estuarine location.

COMPILATION OF HOURGLASS CRUISE DATA

Times in italics are Daylight Saving Time (HC 39 through 45). All times not so indicated are Eastern Standard Time. One foot = 0.3048 meter.

Symbols Used in Tables 3 through 26

Symbol	Definition
*	These temperatures and salinities were determined using an electrodeless induction salinometer. Mechanical and calibration problems prevented the continued use of this equipment.
- - -	Not attempted
♦	Data not recorded.
?	Data recorded, but accuracy doubtful. (In these few instances, data have been recorded which are so inconsistent with related observations that accuracy is highly questionable. These figures are available, but not included).
F	Flat 20-foot trynet.
B	Balloon 20-foot trynet.
O	45-foot balloon-type otter trawl.
†	Some traps lost (Post HC 26, lost 10: Post HC 41, lost 1: Table 25 only).
- ↓ -	Applicable data recorded below. (Table 25) (Note: When more than one collection was taken in the same area it was often impractical to take separate data for each one. Consequently, the recorded data utilized for each sample are indicated by these symbols - ↓ - - ↑ - .
- ↑ -	Applicable data recorded above. (Table 25)
X	Stations *not* in Hourglass pattern.

TABLE 3. FISHERY STATION A

HC18 through 45 – 27°35'N, 82°50'W

Depth – 20 feet

Cruise number	Date	Trynet type	Sample Time			Temp. °C		Salinity °/oo		General Field Observations				
			trynet	dredge	plankton	sur.	bot.	sur.	bot.	Wind dir.	Wind est. vel. K	Secchi ft.	Water Condition	Weather
HC 18	03 August 1965	F	0845-0900	0905-0920	0930-1000	28.5	28.8	?	?	•	•	---	turbid, 1' chop	partly cloudy
HC 19	30 August 1965	F	2025-2055	2025-2040	2055-2130	30.7	30.5	32.94	32.63	•	•	---	ripply	clear
HC 20	04 October 1965	F	1750-1820	1750-1805	1825-1855	28.0	27.8	35.28	34.61	NW	15	---	2-3' swell, slight chop	clear
HC 21	08 November 1965	F	1600-1630	1600-1615	1635-1705	*21.80	*21.80	*32.20	*32.32	NW	10	---	1' swell, clear	clear, sunny
HC 22	03 December 1965	F	1530-1600	1530-1545	1605-1635	18.5	18.5	33.05	32.84	calm	00	---	clear, calm	cloudy, hazy sun
HC 23	03 January 1966	F	1555-1625	1555-1610	1630-1700	19.0	19.0	32.58	33.51	NE	05	15	calm	40% cloud cover
HC 24	07 February 1966	F	1515-1545	1515-1530	1550-1620	*11.22	*11.30	31.91	*29.8	NW	15	06	2' chop, slightly turbid	clear, bright sun
HC 25	03 March 1966	F	1610-1640	1610-1625	1645-1715	*20.41	*19.46	33.79	*31.16	SW	10-12	12	1' chop	clear
HC 26	06 April 1966	F	1635-1705	1635-1650	1710-1740	19.5	19.5	33.67	33.80	NW	10	10	3' chop	clear
HC 27	02 May 1966	F	1645-1715	1645-1700	1720-1750	26.0	26.0	35.07	35.09	W	10	18	2' chop	clear
HC 28	06 June 1966	F	1550-1620	1550-1605	1620-1650	27.0	27.0	34.85	34.92	WNW	05	05	1' chop	90% overcast, dull sun, rain
HC 29	02 July 1966	F	1450-1520	1450-1505	1520-1550	28.0	28.0	35.09	35.13	SW	15	09	1½' chop	thin overcast, hazy sun
HC 30	01 August 1966	F	1550-1620	1550-1605	1610-1640	30.0	30.0	34.44	34.51	SW	05	06	1' chop	90% overcast
HC 31	31 August 1966	F	1625-1655	1625-1640	1700-1730	30.0	30.0	34.06	34.09	NNW	15	06	2' chop	clear
HC 32	08 October 1966	B	1515-1545	1515-1530	1550-1620	28.5	28.0	32.20	33.18	W	05	06	1' swell	partly cloudy
HC 33	06 November 1966	B	1615-1645	1615-1630	1650-1720	20.5	20.5	33.56	33.89	E	05	07	1' chop	clear
HC 34	01 December 1966	B	1630-1700	1630-1645	1705-1735	18.0	18.0	32.67	33.22	N	08	06	2' chop	clear
HC 35	06 January 1967	B	1600-1630	1600-1615	1635-1705	17.5	17.5	33.32	33.63	calm	00	04	calm	clear
HC 36	05 February 1967	B	1610-1640	1610-1625	1645-1700	17.5	17.5	34.34	34.47	NNW	05	10	1' chop	90% thin overcast
HC 37	02 March 1967	B	1605-1635	1605-1620	1640-1710	18.0	16.0	32.91	33.84	WNW	05	10	calm	90% thin overcast
HC 38	03 April 1967	B	1550-1620	1550-1605	1625-1655	21.5	21.5	34.30	34.64	N	15	09	2' chop	clear
HC 39	11 May 1967	B	*1730-1800*	*1655-1710*	*1805-1835*	26.5	26.5	35.71	35.74	SW	15	08	2' chop	clear
HC 40	02 June 1967	B	*1655-1725*	*1655-1710*	*1730-1800*	28.5	28.5	35.95	35.97	NW	08	07	1' chop	partly cloudy
HC 41	01 July 1967	B	*1700-1730*	*1700-1715*	*1735-1805*	31.5	31.5	36.04	36.18	W	10	08	1' chop	partly cloudy
HC 42	01 August 1967	B	*1650-1720*	*1650-1705*	*1725-1755*	30.5	30.5	35.32	35.44	SW	03	07	2' chop	partly cloudy
HC 43	31 August 1967	B	*1655-1725*	*1655-1710*	*1735-1805*	30.5	30.5	33.86	34.85	NW	10	07	2' chop	partly cloudy
HC 44	05 October 1967	B	*1700-1730*	*1700-1715*	*1735-1805*	26.0	25.5	33.58	34.97	W	08	06	½' chop	cloudy
HC 45	02 November 1967	B	1555-1625	1555-1610	1630-1700	23.5	23.5	33.89	34.56	NW	10	10	2' chop	clear

TABLE 4. FISHERY STATION B

HC 18 through 45 – 27°37'N, 83°07'W

Depth – 60 feet

Cruise number	Date	Trynet type	Sample Time				Temp. °C		Salinity °/oo		Wind		General Field Observations		
			trynet	dredge	plankton	nekton	sur.	bot.	sur.	bot.	dir.	est. vel. K	Secchi ft.	Water condition	Weather
HC 18	03 August 1965	F	1145-1200	1149-1204	1215-1245	---	29.0	29.0	?	?	♦	♦	---	clear	♦
Post HC 18	26 August 1965	F	1315-1345	1315-1330	---	---	31.0	30.0	35.42	35.95	calm	00	---	clear, slight roll	30% cloud cover, sunny
HC 19	30 August 1965	F	2255-2325	2255-2310	2325-2355	---	29.7	27.9	36.06	35.34	♦	♦	---	4-6' sea	clear
HC 20	04 October 1965	F	2100-2130	2100-2115	2140-2210	---	28.0	27.0	35.71	35.74	NW	15	---	2-4' swell	clear
Post HC 20	20 October 1965	F	0945-1015	0945-1000	1025-1055	---	*26.56	*24.72	*35.20	*35.32	E	05	---	clear, calm	20% wispy clouds, sunny
HC 21	08 November 1965	F	1850-1920	1850-1905	1925-1955	---	*23.12	*23.28	*35.00	*35.00	NW	10-12	---	1' swell	clear
Post HC 21	19 November 1965	F	1330-1400	1330-1345	1405-1435	---	23.5	23.5	34.32	35.51	WNW	15	---	2' swell, clear	10% cloud cover, sunny
HC 22	03 December 1965	F	1805-1835	1805-1820	1840-1910	---	20.5	20.5	35.16	35.19	NE	05	---	calm	80% cloud cover
HC 23	03 January 1966	F	1820-1850	1820-1835	1855-1925	---	19.2	18.7	34.92	35.30	NE	05	---	calm	80% cloud cover
Post HC 23	19 January 1966	F	1000-1030	1000-1015	1035-1105	---	17.0	17.0	35.37	35.37	NE	15	35	3-4' swell	40% cloud cover
HC 24	07 February 1966	F	1800-1830	1800-1815	1835-1905	---	13.6	13.9	35.23	*33.0	N	10	---	2' chop, clear	clear
Post HC 24	20 February 1966	F	1255-1325	1255-1310	1330-1400	---	*15.6	*15.9	*32.2	*33.14	N-NW	15	30	3-4' sea	clear
HC 25	03 March 1966	F	1855-1925	1855-1910	1930-2000	---	*20.16	*20.00	34.64	*31.22	SW	10	---	1' chop	clear
Post HC 25	26 March 1966	F	1240-1310	1240-1255	1315-1345	---	18.5	18.0	34.87	35.59	calm	00	---	calm	overcast
HC 26	06 April 1966	F	1905-1935	1905-1920	1940-2010	---	18.5	18.0	34.64	35.83	NW	05	---	1' swell	clear
Post HC 26	15 April 1966	F	1310-1340	1310-1325	1345-1415	---	21.0	19.5	34.92	36.06	calm	00	40	calm	overcast
HC 27	02 May 1966	F	1950-2020	1950-2005	2025-2055	---	23.5	22.5	35.02	34.99	W	10	32	2' chop	clear
Post HC 27	18 May 1966	F	1410-1440	1410-1425	1445-1515	---	25.5	25.0	35.58	35.82	SW	10	35	1' chop	100% very thin overcast, hazy sun
HC 28	06 June 1966	F	1820-1850	1820-1835	1850-1920	---	26.5	25.5	35.58	35.61	ESE	10	23	3' chop	90% overcast
Post HC 28	17 June 1966	F	1440-1510	1440-1455	1510-1540	---	28.5	26.5	35.54	35.71	WSW	10	30	1' chop	75% overcast
HC 29	02 July 1966	F	1720-1750	1720-1735	1750-1820	---	28.0	27.5	35.85	35.78	WSW	10	24	1' chop	overcast, slight drizzle
Post HC 29	10 July 1966	F	1400-1430	1400-1415	1430-1500	---	28.5	27.0	35.70	35.47	SE	10	18	2' chop	90% overcast
HC 30	01 August 1966	F	1830-1900	1830-1845	1905-1935	---	29.5	28.0	♦	36.16	calm	00	28	1' chop	90% overcast
Post HC 30	10 August 1966	F	1435-1505	1435-1450	1510-1540	---	30.0	30.0	35.71	35.71	SW	15	30	3' chop	10% cloud cover
HC 31	31 August 1966	F	1900-1930	1900-1915	1935-2005	---	30.0	28.5	35.46	35.93	NNW	15	12	3' chop	clear
Post HC 31	08 September 1966	F	1030-1100	1030-1045	1110-1125	---	30.0	30.0	35.59	35.76	ENE	05	45	1' chop	75% overcast
HC 32	08 October 1966	B	1750-1820	1750-1805	1830-1900	---	28.5	27.8	35.59	35.74	NNE	10	---	2' swell	partly cloudy

Post HC 32	18 October 1966	B	1045-1115	1045-1100	1120-1150	1045-1115	28.0	28.0	35.42	35.42	SE	15	54	2' chop	30% overcast
HC 33	06 November 1966	B	1845-1915	1845-1900	1920-1950	1845-1915	24.0	24.0	36.09	36.18	N	18	08	3' chop	clear
Post HC 33	19 November 1966	B	1140-1210	1030-1045	1220-1250	1030-1100	24.0	24.5	36.00	36.12	NE	10	50	1' chop	clear
HC 34	01 December 1966	B	1910-1940	1910-1935	1945-2015	1910-1940	20.0	20.0	35.18	35.16	N	08	05	2' chop	clear
Post HC 34	13 December 1966	B	1020-1050	1020-1035	1055-1125	1020-1050	19.0	19.0	35.34	35.42	N	10	26	4' sea	90% overcast
HC 35	06 January 1967	B	1840-1910	1840-1855	1920-1950	1840-1910	18.5	18.5	35.76	35.76	calm	00	08	calm	clear
Post HC 35	20 January 1967	B	1045-1115	1045-1100	1115-1145	1045-1115	18.0	18.0	35.88	35.99	NE	10	40	3' chop	very slight cloud cover
HC 36	05 February 1967	B	1850-1920	1850-1905	1925-1955	1850-1920	17.5	16.5	35.58	35.85	NW	03	03	1½' chop	50% wispy cloud cover
Post HC 36	27 February 1967	B	1310-1340	1310-1325	1350-1420	1310-1340	16.5	16.5	35.58	35.59	SE	05	27	1' chop	clear
HC 37	02 March 1967	B	1840-1910	1840-1855	1915-1945	1840-1910	17.0	16.5	35.50	35.61	calm	00	08	calm	partly cloudy
Post HC 37	14 March 1967	B	1005-1035	1005-1020	1040-1110	1005-1035	20.5	18.0	35.21	35.68	calm	00	50	calm	partly cloudy
HC 38	03 April 1967	B	1830-1900	1830-1845	1910-1940	1830-1900	21.0	20.0	35.42	35.71	NW	12	15	2' chop	clear
Post HC 38	11 April 1967	B	1330-1400	1330-1345	1405-1435	1330-1400	25.5	21.5	35.73	35.78	calm	00	60	calm	clear
HC 39	11 May 1967	B	*2000-2030*	*2000-2015*	*2035-2105*	*2000-2030*	25.0	24.5	36.00	36.09	WSW	05	11	2' chop	clear
Post HC 39	20 May 1967	B	*1330-1400*	*1330-1345*	*1405-1435*	*1330-1400*	25.5	25.0	36.35	36.28	NW	05	46	1' chop	clear
HC 40	02 June 1967	B	*1940-2010*	*1940-1955*	*2015-2045*	*1940-2010*	27.0	24.0	36.07	36.18	NW	08	08	1' chop	partly cloudy, overcast
Post HC 40	20 June 1967	B	*1345-1415*	*1345-1400*	*1420-1450*	*1345-1415*	28.5	28.0	36.26	36.26	WNW	08	36	1' chop	partly cloudy
HC 41	01 July 1967	B	*1935-2005*	*1935-1950*	*2010-2040*	*1935-2005*	30.0	26.0	36.23	36.21	W	10	26	1' chop	partly cloudy
Post HC 41	11 July 1967	B	*1140-1210*	*1140-1155*	*1220-1250*	*1140-1210*	30.5	30.0	36.00	36.04	SE	05	38	1' chop	partly cloudy
HC 42	01 August 1967	B	*1930-2000*	*1930-1945*	*2005-2035*	*1930-2000*	29.5	25.0	35.97	36.23	WSW	03	30	2' chop	partly cloudy
Post HC 42	11 August 1967	B	*1325-1355*	*1325-1340*	*1405-1435*	*1325-1355*	30.5	29.5	35.62	36.20	W	10	38	3' chop	partly cloudy
HC 43	31 August 1967	B	*1930-2000*	*1930-1945*	*2010-2040*	*1930-2000*	29.5	25.0	35.57	36.26	NNW	08	17	2' chop	partly cloudy
Post HC 43	11 September 1967	B	*1310-1340*	*1310-1325*	*1350-1420*	*1310-1340*	29.0	24.0	35.61	36.33	E	10	54	1' chop	partly cloudy
HC 44	05 October 1967	B	*1935-2005*	*1935-1950*	*2015-2045*	*1935-2005*	26.5	26.5	35.88	35.90	N	10	06	2' chop	cloudy
Post HC 44	25 October 1967	B	*1330-1400*	*1330-1345*	*1410-1440*	*1330-1400*	26.0	24.5	35.73	36.06	calm	00	50	calm	clear
HC 45	02 November 1967	B	1835-1905	1835-1850	1910-1940	1835-1905	24.0	24.0	35.82	35.93	NW	05	08	2' chop	clear
Post HC 45	20 November 1967	B	1435-1505	1335-1350	1415-1445	1335-1405	20.5	20.5	35.91	35.97	NNW	03	44	1' swell	clear

TABLE 5. FISHERY STATION C

HC 18 through 45 – 27° 37'N, 83° 28'W

Depth – 120 feet

Cruise number	Date	Trynet type	Sample Time				Temp. °C		Salinity °/oo		Wind		General Field Observations		
			trynet	dredge	plankton	nekton	sur.	bot.	sur.	bot.	dir.	est. vel. K	Secchi ft.	Water condition	Weather
HC 18	03 August 1965	F	1555-1610	1555-1610	1625-1655	---	28.5	25.8	?	?	♦	♦	---	clear, choppy	rain squall in progress
Post HC 18	26 August 1965	F	1700-1730	1700-1715	---	---	30.0	24.0	34.61	36.06	♦	♦	---	clear	30% cloud cover, sunny
HC 19	31 August 1965	F	0235-0305	0235-0250	0305-0335	---	29.5	23.2	34.54	36.19	♦	♦	---	4-6' sea	clear, windy
HC 20	05 October 1965	F	0115-0145	0115-0130	0205-0235	---	27.5	24.5	35.70	36.02	E	15	---	2-4' swell, slight chop	clear
Post HC 20	20 October 1965	F	1305-1335	1305-1320	1345-1415	---	*26.32	*24.04	*34.92	*35.60	S	05	---	calm, slight ripple	60% cloud cover, dull sun
HC 21	08 November 1965	F	2210-2240	2210-2225	2245-2315	---	*23.56	*23.52	*35.20	*35.00	NW	10	---	1' swell	clear
Post HC 21	19 November 1965	F	1630-1700	1630-1645	1705-1735	---	23.0	23.0	35.93	35.99	WNW	10	---	2' swell, clear	20% cloud cover, sunny
HC 22	03 December 1965	F	2125-2155	2125-2140	2200-2230	---	21.5	21.5	35.54	35.80	NE	15	---	1-2' chop	cloudy
HC 23	03 January 1966	F	2140-2210	2140-2155	2220-2250	---	20.2	20.2	36.09	36.06	N	15	---	2' chop	80% wispy clouds
Post HC 23	19 January 1966	F	1330-1400	1330-1345	1405-1435	---	18.2	18.5	36.38	36.38	NE	15	40	3-4' sea	overcast
HC 24	07 February 1966	F	2120-2150	2120-2135	2155-2225	---	*16.65	*15.85	36.24	*33.40	N	15	---	2' chop	clear
Post HC 24	20 February 1966	F	1625-1655	1625-1640	1700-1730	---	*18.28	*15.82	*33.54	*33.50	NNW	15-18	40	4-6' sea	80% high thin clouds, dull sun
HC 25	03 March 1966	F	2235-2305	2235-2250	2310-2340	---	*21.2	*19.52	36.09	*32.26	SW	10	---	1' chop	clear
Post HC 25	27 March 1966	F	0920-0950	0835-0850	0955-1025	---	18.5	18.5	36.23	36.21	NW	15	68	4' sea	30% cloud cover, sunny
HC 26	06 April 1966	F	2230-2300	2230-2245	2305-2335	---	19.0	18.5	36.33	36.06	NW	10	---	1' chop	clear
Post HC 26	16 April 1966	F	1010-1040	1010-1025	1045-1115	---	19.0	20.5	35.74	36.33	N	15	80	3' chop	clear
HC 27	2-3 May 1966	F	2330-2400	2330-2345	2400-0030	---	23.0	20.0	36.14	36.07	NE	05	20	2' chop	clear
Post HC 27	19 May 1966	F	1025-1055	1025-1040	1110-1140	---	25.2	21.8	36.24	36.21	SE	10	60	2' chop	80% overcast
HC 28	06 June 1966	F	2140-2210	2140-2155	2215-2245	---	25.5	21.0	35.97	36.06	ESE	10	08	2' chop	clear
Post HC 28	18 June 1966	F	1015-1045	1015-1030	1045-1115	---	27.0	22.5	36.04	36.24	SW	15	90	1' chop	50% overcast
HC 29	02 July 1966	F	2040-2110	2040-2055	2115-2145	---	27.0	22.5	36.07	36.31	WSW	10	32	1' chop	clear
Post HC 29	11 July 1966	F	1005-1035	1005-1020	1055-1125	---	28.0	23.5	35.80	36.07	SE	10	90	2' chop	75% overcast
HC 30	01 August 1966	F	2150-2220	2150-2205	2230-2300	---	29.0	23.5	36.06	36.43	calm	00	42	calm	50% overcast
Post HC 30	11 August 1966	F	1040-1110	1040-1055	1125-1155	---	29.0	24.5	35.90	36.28	SE	15	90	6' sea	50% patchy overcast
HC 31	31 August 1966	F	2225-2255	2225-2240	2305-2335	---	29.0	24.5	35.32	36.18	N	15	24	3' chop	clear
Post HC 31	08 September 1966	F	1405-1435	1405-1420	1445-1515	---	30.0	25.5	35.37	36.18	ENE	05	90	1' chop	90% wispy overcast
HC 32	08 October 1966	B	2110-2140	2110-2125	2150-2220	---	28.0	24.5	35.76	36.35	E	15	16	3' chop	partly cloudy
Post HC 32	18 October 1966	B	1430-1500	1430-1445	1510-1540	---	28.0	25.5	35.63	36.02	S	10	90	3' chop	50% overcast

HC 33	06 November 1966	B	2155-2225	2155-2210	2235-2305	2155-2225	25.0	25.0	36.11	36.00	NNE	25	20	5' sea	clear
Post HC 33	19 November 1966	B	1440-1510	1440-1455	1520-1550	1440-1510	25.0	25.0	35.99	36.02	NNE	10	44	2' chop	clear
HC 34	01 December 1966	B	2240-2310	2240-2255	2330-2400	2240-2310	22.0	22.0	35.95	35.90	N	10	09	2' chop	clear
Post HC 34	13 December 1966	B	1400-1430	1400-1415	1440-1510	1400-1430	21.5	21.5	35.88	36.00	N	10	43	4' sea	90% overcast
HC 35	06 January 1967	B	2200-2230	2200-2215	2240-2310	2200-2230	20.0	20.0	36.06	36.06	SE	10	12	1' chop	clear
Post HC 35	20 January 1967	B	1410-1440	1410-1425	1440-1510	1410-1440	20.0	20.0	36.16	36.09	N-NE	12	- - -	4' sea	30% cloud cover
HC 36	05 February 1967	B	2240-2310	2240-2255	2320-2350	2240-2310	19.0	18.0	36.09	36.04	S	05	03	1½' chop	clear
Post HC 36	27 February 1967	B	1625-1655	1625-1640	1705-1735	1625-1655	17.0	17.0	36.04	35.99	SE	10	70	3' chop	clear
HC 37	02 March 1967	B	2200-2230	2200-2215	2240-2310	2200-2230	18.0	17.5	36.21	36.19	calm	00	06	calm	partly cloudy
Post HC 37	14 March 1967	B	1430-1500	1430-1445	1510-1540	1430-1500	21.0	17.5	35.90	36.06	calm	00	100	calm	partly cloudy
HC 38	03 April 1967	B	2145-2215	2145-2200	2225-2255	2145-2215	20.0	19.0	36.14	36.11	NW	10	06	2' chop	clear
Post HC 38	12 April 1967	B	0855-0925	0855-0910	0935-1005	0855-0925	22.5	20.0	36.30	36.18	SE	03	54	ripple	clear
HC 39	11-12 May 1967	B	*2320-2350*	*2320-2335*	*2400-0030*	*2320-2350*	24.5	22.0	36.36	36.19	WSW	05	08	2' chop	clear
Post HC 39	20 May 1967	B	*1645-1715*	*1645-1700*	*1725-1755*	*1645-1715*	25.5	22.0	36.50	36.16	NW	05	60	1' chop	clear
HC 40	2-3 June 1967	B	*2300-2330*	*2300-2315*	*2340-0010*	*2300-2330*	26.0	21.5	36.38	36.21	E	15	10	2' chop	partly cloudy
Post HC 40	21 June 1967	B	*0945-1015*	*1000-1015*	*1030-1100*	*0945-1015*	27.0	20.5	35.71	36.26	calm	00	100	1' swell	overcast
HC 41	1-2 July 1967	B	*2310-2340*	*2310-2325*	*2350-0020*	*2310-2340*	30.0	?	36.38	36.33	NW	08	08	1' chop	partly cloudy
Post HC 41	11 July 1967	B	*1510-1540*	*1510-1525*	*1550-1620*	*1510-1540*	31.5	21.0	35.14	35.97	SE	05	100	1' chop	partly cloudy
HC 42	1-2 August 1967	B	*2310-2340*	*2310-2325*	*2350-0020*	*2310-2340*	28.5	19.5	35.19	36.26	SW	03	06	1' chop	partly cloudy
Post HC 42	11 August 1967	B	*1700-1730*	*1700-1715*	*1740-1810*	*1700-1730*	30.0	20.5	35.17	36.31	W	08	50	3' chop	partly cloudy
HC 43	31 August - 01September 1967	B	*2255-2325*	*2255-2310*	*2335-0005*	*2255-2325*	29.0	22.0	34.72	36.47	NW	15	09	2' chop	partly cloudy
Post HC 43	11 September 1967	B	*1620-1650*	*1620-1635*	*1700-1730*	*1620-1650*	29.0	23.5	35.08	36.51	N	08	63	½' chop	partly cloudy
HC 44	5-6 October 1967	B	*2300-2330*	*2300-2315*	*2340-0010*	*2300-2330*	26.5	23.0	36.15	36.47	E	15	06	2' chop	partly cloudy
Post HC 44	25 October 1967	B	*1650-1720*	*1650-1705*	*1730-1800*	*1650-1720*	25.0	21.5	35.73	36.29	NW	05	52	½' chop	partly cloudy
HC 45	02 November 1967	B	2200-2230	2200-2215	2240-2310	2200-2230	24.0	22.5	35.82	36.13	NNE	03	08	2' chop	clear
Post HC 45	21 November 1967	B	1005-1035	1005-1020	1045-1115	1005-1035	21.0	21.0	36.27	36.29	calm	00	40	calm	partly cloudy

TABLE 6. FISHERY STATION D

HC 18 through 45 – 27°37'N, 83°58'W

Depth – 180 feet

Cruise number	Date	Trynet type	Sample Time				Temp. °C		Salinity °/oo		Wind		General Field Observations		
			trynet	dredge	plankton	nekton	sur.	bot.	sur.	bot.	dir.	est. vel. K	Secchi ft.	Water condition	Weather
HC 18	03 August 1965	F	1950-2005	1955-2010	2025-2055	---	28.0	20.0	?	?	◆	◆	---	clear, choppy	squalls in distance
Post HC 18	27 August 1965	F	0835-0905	0840-0855	---	---	◆	◆	35.61	36.26	◆	◆	---	clear, calm	20% cloud cover, sunny, some haze
HC 19	31 August 1965	F	0625-0700	0630-0645	0705-0735	---	29.7	21.2	35.51	36.21	◆	◆	---	4-6' swell, chop	40% cloud cover, low sun
HC 20	05 October 1965	F	0535-0605	0535-0550	0620-0650	---	27.0	24.5	35.52	36.09	E	10	---	4-6' swell, some chop	40% cloud cover
Post HC 20	21 October 1965	F	1155-1225	1155-1210	1235-1305	---	*26.76	*22.36	*35.24	*35.72	calm	00	---	clear, calm	40% cloud cover, dull sun
HC 21	09 November 1965	F	0150-0220	0150-0205	0255-0325	---	*24.68	*24.68	*35.60	*35.60	NNW	10	---	1-2' swell	clear
Post HC 21	20 November 1965	F	1035-1105	1035-1050	1055-1125	---	24.5	24.5	36.02	36.02	NE	10	---	clear, gentle swell	clear, sunny
HC 22	04 December 1965	F	0120-0150	0120-0135	0155-0225	---	23.0	23.0	36.16	36.16	E	15	---	2-3' chop	100% cloud cover
HC 23	04 January 1966	F	0130-0200	0130-0145	0210-0240	---	22.0	21.2	36.31	36.36	E	15	---	2-3' chop	40% wispy cloud cover
Post HC 23	omitted–bad weather	---	---	---	---	---	---	---	---	---	---	---	---	---	---
HC 24	08 February 1966	F	0125-0155	0125-0140	0200-0230	---	*20.40	*18.75	36.50	*33.82	N	15	---	3' chop	clear
Post HC 24	21 February 1966	F	1020-1050	1020-1035	1055-1125	---	*19.62	*16.80	*33.62	*33.78	NE	20	35	6' swell	clear, bright sun
HC 25	04 March 1966	F	0235-0305	0235-0240	0310-0340	---	*21.4	*20.24	36.19	*32.54	SW	10	---	2' swell	clear
Post HC 25	27 March 1966	F	1250-1320	1250-1305	1325-1355	---	20.0	19.5	36.35	36.24	NW	10	90	2' chop	clear, bright sun
HC 26	07 April 1966	F	0235-0305	0235-0250	0310-0340	---	19.5	18.5	36.45	36.28	WNW	10-12	---	2' chop	clear
Post HC 26	16 April 1966	F	1420-1450	1420-1435	1500-1530	---	20.5	19.0	36.41	36.30	N	15	---	5' sea	clear
HC 27	03 May 1966	F	0300-0330	0300-0315	0335-0405	---	23.5	19.5	35.99	36.31	NE	10	22	2' chop	clear
Post HC 27	19 May 1966	F	1430-1500	1430-1445	1505-1535	---	25.5	21.0	35.90	36.35	S	10	55	2' chop	80% thin overcast, bright sun
HC 28	07 June 1966	F	0135-0205	0135-0150	0210-0240	---	25.0	19.0	35.87	36.02	ESE	10	10	2' chop	clear
Post HC 28	18 June 1966	F	1345-1415	1345-1400	1415-1445	---	26.5	20.5	35.50	36.16	W	10-12	60	2' chop	overcast
HC 29	03 July 1966	F	0030-0100	0030-0045	0105-0135	---	26.5	?	35.97	36.00	WSW	10	51	1' chop	clear
Post HC 29	11 July 1966	F	1350-1420	1350-1405	1430-1500	---	28.5	21.5	35.70	36.11	SE	10	90	2' chop	50% overcast
HC 30	02 August 1966	F	0145-0215	0145-0200	0230-0300	---	28.5	21.0	35.85	36.40	SW	10	50	1' chop	10% cloud cover
Post HC 30	11 August 1966	F	1430-1500	1430-1445	1525-1555	---	29.0	22.0	35.51	36.45	SE	15	90	6' sea	20% overcast
HC 31	01 September 1966	F	0220-0250	0220-0235	0305-0335	---	29.0	21.5	35.34	36.18	NNE	15	38	3' chop	clear
Post HC 31	09 September 1966	F	1000-1030	1000-1015	1045-1115	---	29.0	22.0	35.32	36.16	NE	20	90	6' sea	overcast

HC 32	09 October 1966	B	0045-0115	0045-0100	0130-0200	- - -	28.0	22.0	35.52	36.35	E	10	25	2' chop	clear
Post HC 32	19 October 1966	B	1125-1155	1125-1140	1210-1245	1125-1155	27.5	23.0	35.34	36.21	SW	20	54	6' sea	squall
HC 33	09 November 1966	B	0225-0255	0225-0240	0310-0340	0225-0255	25.0	23.0	35.87	36.41	SSE	10	32	2' chop	partly cloudy
Post HC 33	20 November 1966	B	1115-1145	1115-1130	1200-1230	1115-1145	25.0	25.0	35.88	35.99	N	10	78	2' chop	clear
HC 34	02 December 1966	B	0240-0310	0240-0255	0325-0355	0240-0310	23.0	23.0	35.95	35.83	N	05	23	½' chop	clear
Post HC 34	14 December 1966	B	1120-1150	1120-1135	1205-1235	1120-1150	22.5	22.5	35.99	36.04	N	15	28	4' sea	partly cloudy
HC 35	07 January 1967	B	0150-0220	0150-0205	0235-0305	0150-0220	20.0	19.0	36.28	36.18	ESE	20	09	4' sea	clear
Post HC 35	21 January 1967	B	1120-1150	1120-1135	1150-1220	1120-1150	20.0	19.5	36.18	36.16	E-NE	10	66	3' chop	70% cloud cover
HC 36	06 February 1967	B	0220-0250	0220-0235	0305-0335	0220-0250	20.0	18.5	36.30	36.09	S	10	03	1½' chop	clear
Post HC 36	28 February 1967	B	1050-1120	1050-1105,	1135-1205	1050-1120	18.5	18.0	36.11	36.11	S	20	90	4' sea	overcast
HC 37	03 March 1967	B	0140-0210	0140-0155	0215-0245	0140-0210	19.5	18.0	36.36	36.28	ESE	05	09	1' chop	overcast
Post HC 37	15 March 1967	B	0940-1010	0940-0955	1025-1055	0940-1010	21.5	18.5	36.41	36.26	SW	03	90	1' chop	clear
HC 38	04 April 1967	B	0130-0200	0130-0145	0210-0240	0130-0200	21.5	19.5	36.23	36.30	NW	10	06	1' chop	clear
Post HC 38	12 April 1967	B	1225-1255	1225-1240	1305-1335	1225-1255	23.5	19.5	36.41	36.19	E	05	100	1' chop	clear
HC 39	12 May 1967	B	*0320-0350*	*0320-0335*	*0400-0430*	*0320-0350*	25.0	21.0	36.26	36.24	WSW	05	13	2' chop	clear
Post HC 39	21 May 1967	B	*1055-1125*	*1055-1110*	*1135-1205*	*1055-1125*	25.5	21.5	36.41	36.28	SE	10	90	3' chop	partly cloudy
HC 40	03 June 1967	B	*0250-0320*	*0250-0305*	*0330-0400*	*0250-0320*	26.0	18.5	36.31	36.14	NE	05	07	1' chop	partly cloudy
Post HC 40	21 June 1967	B	*1350-1420*	*1350-1405*	*1430-1500*	*1350-1420*	28.0	19.5	35.82	36.28	WSW	08	100	1' chop	partly cloudy
HC 41	02 July 1967	B	*0305-0335*	*0305-0320*	*0345-0415*	*0305-0335*	29.5	19.5	35.28	36.31	W	05	15	1' chop	partly cloudy
Post HC 41	12 July 1967	B	*1110-1140*	*1110-1125*	*1155-1225*	*1110-1140*	30.0	20.5	33.61	35.97	calm	00	120	1' swell	partly cloudy
HC 42	02 August 1967	B	*0310-0340*	*0310-0325*	*0355-0425*	*0310-0340*	28.5	21.5	34.92	36.47	W	03	17	1' chop	partly cloudy
Post HC 42	25 August 1967	B	*1635-1705*	*1635-1650*	*1720-1750*	*1635-1705*	29.0	23.0	35.26	36.60	•	08	100	2' chop	partly cloudy
HC 43	01 September 1967	F	*0310-0340*	*0310-0325*	*0355-0425*	*0310-0340*	28.5	22.5	35.50	36.55	NW	15	18	2' chop	partly cloudy
Post HC 43	12 September 1967	B	*1115-1145*	*1115-1130*	*1200-1230*	*1115-1145*	28.0	22.0	35.77	36.47	NE	18	56	5' sea	partly cloudy
HC 44	06 October 1967	B	*0305-0335*	*0305-0320*	*0345-0415*	*0305-0335*	26.0	22.0	36.04	36.49	E	10	06	2' chop	partly cloudy
Post HC 44	27 October 1967	B	*1815-1845*	*1815-1830*	*1900-1930*	*1815-1845*	25.0	20.0	35.91	36.49	N-NW	3-5	25	clear, no chop	slight breeze
HC 45	03 November 1967	B	0205-0235	0205-0220	0250-0320	0205-0235	23.5	21.0	35.57	36.45	NNW	05	08	2' chop	clear
Post HC 45	21 November 1967	B	1420-1450	1420-1435	1505-1535	1420-1450	23.0	21.5	36.45	36.36	calm	00	100	calm	partly cloudy

TABLE 7. FISHERY STATION E

HC 18 – 27°37'N, 84°21'W
HC 19 through 45 – 27°37'N, 84°13'W

Depth – HC 18 – 300 feet
HC 19 through 45 – 240 feet

Cruise number	Date	Trynet type	Sample Time			Temp. °C		Salinity °/oo		General Field Observations				
			trynet	dredge	plankton	sur.	bot.	sur.	bot.	Wind dir.	Wind est. vel. K	Secchi ft.	Water condition	Weather
HC 18	04 August 1965	F	---	0805-0820	0945-1015	28.5	?	?	?	♦	♦	---	clear	clear, breezy
HC 19	31 August 1965	F	0900-0930	0900-0915	0935-1005	29.8	21.3	36.00	36.35	♦	♦	---	4-6' swell, chop	50% cloud cover, sunny
HC 20	05 October 1965	F	0845-0915	0845-0900	0925-0955	28.5	26.0	35.95	36.12	E	15	---	4-6' swell, slight chop	40% cloud cover
HC 21	09 November 1965	F	0455-0525	0455-0510	0530-0600	*25.08	*24.88	*35.64	*35.64	NNW	05	---	1' swell	50% cloud cover
HC 22	04 December 1965	F	0405-0435	0405-0420	0445-0515	23.0	20.0	36.19	36.36	SE	15-20	---	3' chop	cloudy
HC 23	04 January 1966	F	0405-0435	0405-0420	0445-0515	22.0	21.5	36.38	36.20	E	15	---	2-3' chop	100% cloud cover
HC 24	08 February 1966	F	0415-0445	0415-0430	0455-0525	*19.76	*19.99	36.47	*34.0	N	10	---	3' chop	clear
HC 25	04 March 1966	F	0525-0555	0525-0540	0600-0630	*21.46	*20.85	36.21	*32.65	S	18-20	---	2-3' chop	overcast
HC 26	07 April 1966	F	0525-0555	0525-0540	0600-0630	19.5	17.5	36.41	36.19	WNW	10-12	---	2' chop	30% cloud cover
HC 27	03 May 1966	F	0530-0600	0530-0545	0605-0635	23.5	18.5	35.80	36.19	SE	10	55	2' chop	80% cloudy
HC 28	07 June 1966	F	0410-0440	0410-0425	0445-0515	25.0	19.0	35.35	35.97	ESE	10	40	3' swell	clear
HC 29	03 July 1966	F	0315-0345	0315-0330	0350-0420	26.5	20.0	36.26	35.54	W	10	56	1' chop	clear
HC 30	02 August 1966	F	0450-0520	0450-0505	0535-0605	28.5	19.0	34.66	36.28	SW	10	80	1' chop	10% cloud cover
HC 31	01 September 1966	F	0500-0530	0500-0515	0545-0615	28.5	19.5	35.18	36.26	NE	15	50	3' chop	clear
HC 32	09 October 1966	B	0325-0355	0325-0340	0410-0440	27.5	20.0	35.61	36.28	SE	10	26	2' chop	clear
HC 33	09 November 1966	B	0500-0530	0500-0515	0545-0615	25.0	21.5	36.00	36.47	S-SE	15	35	3' chop	partly cloudy
HC 34	02 December 1966	B	0515-0545	0515-0530	0600-0630	23.0	23.0	35.97	35.99	N	05	30	½' chop	clear
HC 35	07 January 1967	B	0435-0505	0435-0450	0520-0550	21.5	---	36.09	---	ESE	22	09	4' sea	overcast, rough seas prevented bottom temp. and salinity sample.
HC 36	06 February 1967	B	0450-0520	0450-0505	0535-0605	21.0	20.0	36.24	36.23	SSW	15	03	2' chop	clear
HC 37	03 March 1967	B	0420-0450	0420-0435	0515-0545	19.5	19.0	36.31	36.36	ESE	05	09	1' chop	overcast
HC 38	04 April 1967	B	0355-0425	0355-0410	0440-0510	22.0	19.5	36.30	36.24	NW	10	17	1' chop	clear
HC 39	12 May 1967	B	*0605-0635*	*0605-0620*	*0650-0720*	24.5	19.5	36.24	36.19	SW	05	65	2' chop	clear
HC 40	03 June 1967	B	*0530-0600*	*0530-0545*	*0615-0645*	26.0	18.5	36.38	36.14	S	15	48	1' chop	partly cloudy
HC 41	02 July 1967	B	*0545-0615*	*0545-0600*	*0630-0700*	29.0	21.5	35.14	36.52	SW	08	65	1' chop	partly cloudy
HC 42	02 August 1967	B	*0600-0630*	*0600-0615*	*0645-0715*	29.0	21.5	34.95	36.53	W	03	65	1' chop	partly cloudy
HC 43	01 September 1967	F	*0550-0620*	*0550-0605*	*0635-0705*	28.5	21.0	35.19	36.55	NW	15	43	2' chop	partly cloudy
HC 44	06 October 1967	B	*0545-0615*	*0545-0600*	*0630-0700*	26.0	21.0	35.90	36.53	NE	10	35	2' chop	partly cloudy
HC 45	03 November 1967	B	0430-0500	0430-0445	0515-0545	24.5	20.0	36.29	36.40	NNW	05	08	4' swell	clear

TABLE 8. FISHERY STATION I

HC 18 through 45 – 26°24'N, 82°06'W

Depth – 20 feet

Cruise number	Date	Trynet type	Sample Time			Temp. °C		Salinity °/oo		General Field Observations				
			trynet	dredge	plankton	sur.	bot.	sur.	bot.	Wind dir.	Wind est. vel. K	Secchi ft.	Water condition	Weather
HC 18	06 August 1965	F	1230-1300	1230-1245	1305-1335	29.7	29.5	?	?	◆	◆	---	turbid	◆
HC 19	03 September 1965	F	1830-1900	1830-1845	1905-1935	29.8	29.6	34.59	35.13	◆	◆	---	slightly turbid, gentle swell	80% cloud cover, hazy, scattered showers
HC 20	12 October 1965	F	1840-1910	1840-1855	1915-1945	*24.44	*23.80	*34.76	*35.88	NW	05	---	1' swell	10% cloud cover
HC 21	12 November 1965	F	1730-1800	1730-1745	1805-1835	*23.72	*23.36	*34.44	*30.24	SW	10	---	1' swell, clear	10% cloud cover
HC 22	06 December 1965	F	1710-1740	1710-1725	1745-1815	19.5	19.5	34.82	34.99	N	15	---	1' chop, clear	60% cloud cover
HC 23	13 January 1966	F	1600-1630	1530-1545	1635-1705	19.0	19.0	34.35	34.34	calm	00	20	clear, calm	clear, sunny
HC 24	14 February 1966	F	1630-1700	1630-1645	1705-1735	*17.06	*15.50	*31.30	*31.56	calm	00	06	calm	50% overcast, hazy sun
HC 25	09 March 1966	F	1530-1600	1530-1545	1605-1635	18.7	17.9	---	---	E	10	06	1' chop	40% overcast, sunny
Repeat HC 25	21 March 1966	F	1700-1730	1700-1715	1735-1805	20.7	20.5	34.40	34.46	W	10	---	1' chop	clear
HC 26	11 April 1966	F	1535-1605	1535-1550	1610-1640	21.5	21.5	34.68	34.89	S	10	20	1' chop	clear
HC 27	11 May 1966	F	1505-1535	1505-1520	1540-1610	27.0	26.0	35.06	35.09	calm	00	07	calm	40% cloud cover, bright sun
HC 28	12 June 1966	F	1455-1525	1455-1510	1525-1555	29.0	28.0	35.19	35.34	NW	10	03	½' chop, area of discoloration 1 mi. diam., red brown to brown	clear
HC 29	05 July 1966	F	1530-1600	1530-1545	1600-1630	29.0	29.0	35.28	35.44	NW	10	15	1' chop	20% cloud cover
HC 30	05 August 1966	F	1540-1610	1540-1555	1615-1645	31.5	31.0	31.53	32.42	NNW	05	12	1' chop	90% thin overcast, sunny
HC 31	04 September 1966	F	1540-1610	1540-1555	1615-1645	32.0	31.0	34.20	34.87	W	05	12	1' chop	clear
HC 32	12 October 1966	B	1610-1640	1535-1550	1645-1715	29.0	28.5	34.30	34.49	calm	00	14	calm	10% overcast
HC 33	12 November 1966	B	1600-1630	1600-1615	1635-1705	24.0	23.5	34.42	34.54	W	08	10	½' chop	clear
HC 34	06 December 1966	B	1530-1600	1530-1545	1605-1635	19.5	19.5	34.64	34.51	calm	00	09	calm	partly cloudy
HC 35	12 January 1967	B	1615-1645	1615-1630	1650-1720	19.8	19.5	34.49	34.78	WNW	3-5	02	½' swell	clear with light clouds
HC 36	15 February 1967	B	1610-1640	1610-1625	1645-1715	19.5	18.5	34.95	35.07	calm	00	10	1' chop	clear
HC 37	08 March 1967	B	1550-1620	1550-1605	1625-1655	22.0	20.5	35.11	35.19	NW	10	07	1' chop	partly cloudy
HC 38	07 April 1967	B	1545-1615	1545-1600	1620-1650	23.0	22.5	35.63	35.63	WNW	10	10	1' chop	clear
HC 39	15 May 1967	B	*1650-1720*	*1650-1705*	*1725-1755*	28.0	28.0	35.92	35.92	SW	10	10	3' chop	clear
HC 40	06 June 1967	B	*1710-1740*	*1635-1650*	*1745-1815*	29.0	28.5	36.30	36.28	W	10	12	½' chop	partly cloudy
HC 41	05 July 1967	B	*1645-1715*	*1645-1700*	*1720-1750*	31.0	31.0	35.90	36.16	W	03	08	1' chop	overcast
HC 42	07 August 1967	B	*1705-1735*	*1635-1650*	*1740-1810*	31.0	31.0	36.26	36.47	NW	10	19	½' chop	partly cloudy
HC 43	04 September 1967	F	*1635-1705*	*1635-1650*	*1710-1740*	30.5	30.5	35.79	35.86	W	05	11	1' chop	partly cloudy
HC 44	11 October 1967	B	*1650-1720*	*1650-1705*	*1725-1755*	26.0	26.0	34.25	34.58	NW	05	07	1' chop	partly cloudy
HC 45	14 November 1967	B	1540-1610	1540-1555	1615-1645	21.0	20.5	34.97	35.23	NW	10	14	½' chop	clear

TABLE 9. FISHERY STATION J

HC 18 through 45 – 26°24'N, 82°28'W

Depth – 60 feet

Cruise number	Date	Trynet type	Sample Time			Temp. °C		Salinity °/oo		General Field Observations				
			trynet	dredge	plankton	sur.	bot.	sur.	bot.	Wind dir.	Wind est. vel. K	Secchi ft.	Water condition	Weather
HC 18	06 August 1965	F	1600-1620 and 1655-1705	1600-1615	1710-1740	30.2	30.0	?	?	◆	◆	---	clear	◆
HC 19	03 September 1965	F	2150-2220	2150-2205	2225-2255	29.5	28.1	36.21	36.19	◆	◆	---	4-6' chop, slightly turbid	80% wispy cloud cover, hazy
HC 20	12 October 1965	F	2210-2240	2210-2225	2245-2315	*28.04	*25.96	*35.48	*35.96	NW	02	---	calm	90% cloud cover
HC 21	12 November 1965	F	2100-2130	2100-2115	2130-2200	*23.68	*23.24	*34.88	*35.32	calm	00	---	calm	clear
HC 22	06 December 1965	F	2035-2105	1955-2010	2110-2140	20.5	20.5	35.25	35.18	NW	15	---	1' chop	overcast
HC 23	13 January 1966	F	1830-1900	1830-1845	1905-1935	19.5	19.0	35.47	35.46	calm	00	---	calm	clear
HC 24	14 February 1966	F	1905-1935	1905-1920	1940-2010	*16.64	*16.44	*32.81	*32.84	NNW	5-8	---	1' swell	moderately clear
HC 25	09 March 1966	F	1820-1850	1820-1835	1855-1925	18.0	17.5	---	---	N	15	---	2' chop	overcast
Repeat HC 25	21 March 1966	F	1935-2005	1935-1950	2010-2040	20.5	18.5	34.71	35.50	WNW	10	---	1' chop	clear
HC 26	11 April 1966	F	1845-1915	1845-1900	1920-1950	20.5	20.0	35.50	35.71	calm	00	---	calm	clear
HC 27	11 May 1966	F	1745-1815	1745-1800	1820-1850	25.0	24.0	35.56	35.50	NE	10	40	1' chop	overcast
HC 28	12 June 1966	F	1750-1820	1750-1805	1820-1850	28.5	26.0	35.87	36.04	NW	10	06	1' chop	clear
HC 29	05 July 1966	F	1815-1845	1815-1830	1850-1920	29.5	27.0	34.82	35.83	NW	15	21	2' chop	80% thin overcast
HC 30	05 August 1966	F	1830-1900	1830-1945	1905-1935	30.5	28.0	35.07	36.04	WNW	05	45	1' chop	40% overcast
HC 31	04 September 1966	F	1830-1900	1830-1845	1905-1935	30.5	28.5	33.85	35.92	WNW	10	13	1' chop	clear
HC 32	12 October 1966	B	1835-1905	1835-1850	1910-1940	28.5	28.0	35.02	35.83	N	15	08	1' chop	clear
HC 33	12 November 1966	B	1830-1900	1830-1845	1905-1935	25.0	25.0	35.74	35.74	W	08	05	½' chop	clear
HC 34	06 December 1966	B	1810-1840	1810-1825	1845-1915	21.0	21.0	35.44	35.58	calm	00	11	calm	partly cloudy
HC 35	12 January 1967	B	1850-1920	1850-1905	1925-1955	20.2	20.0	35.87	35.85	NW	?	04	light chop, 1' swell	clear, slight haze
HC 36	15 February 1967	B	1845-1915	1845-1900	1920-1950	19.0	18.5	35.85	35.85	calm	00	10	1' chop	clear
HC 37	08 March 1967	B	1825-1855	1825-1840	1900-1930	20.0	18.0	35.88	35.76	NNW	15	18	2' chop	clear
HC 38	07 April 1967	B	1820-1850	1820-1835	1855-1925	22.0	21.0	35.64	35.70	NW	12	22	2' chop	clear
HC 39	15 May 1967	B	*1945-2015*	*1945-2000*	*2020-2050*	26.5	25.5	35.93	35.83	SW	05	17	2' chop	clear
HC 40	06 June 1967	B	*1945-2015*	*1945-2000*	*2020-2050*	28.0	25.5	36.16	36.24	NW	05	25	½' chop	partly cloudy
HC 41	05 July 1967	B	*1930-2000*	*1930-1945*	*2010-2040*	30.5	29.0	36.38	36.30	calm	00	37	1' swell	partly cloudy
HC 42	07 August 1967	B	*1940-2010*	*1940-1955*	*2020-2050*	30.0	26.0	36.38	36.30	calm	00	31	½' chop	partly cloudy
HC 43	04 September 1967	F	*1920-1950*	*1920-1935*	*2000-2030*	29.5	25.0	34.61	36.15	calm	00	14	calm	partly cloudy
HC 44	11 October 1967	B	*1935-2005*	*1935-1950*	*2015-2045*	26.5	26.5	35.48	35.59	NW	10	12	2' chop	partly cloudy
HC 45	14 November 1967	B	1825-1855	1825-1840	1900-1930	21.5	21.5	35.86	36.02	NW	10	22	½' chop	clear

TABLE 10. FISHERY STATION K

HC 18 through 45 – 26°24'N, 82°58'W

Depth – 120 feet

Cruise number	Date	Trynet type	Sample Time			Temp. °C		Salinity °/oo		General Field Observations				
			trynet	dredge	plankton	sur.	bot.	sur.	bot.	Wind dir.	Wind est. vel. K	Secchi ft.	Water condition	Weather
HC 18	06 August 1965	F	2030-2100	2035-2050	2110-2140	29.0	24.8	?	?	♦	♦	---	clear	♦
HC 19	04 September 1965	F	0130-0200	0130-0145	0210-0240	28.8	22.0	35.11	36.04	♦	♦	---	turbid, 6-8' swell	partly cloudy
HC 20	13 October 1965	F	0145-0215	0145-0200	0225-0255	*27.52	*24.72	*35.80	*36.00	NW	10	---	chop	100% hazy cloud cover
HC 21	12 November 1965	F	0100-0130	0100-0115	0130-0200	*24.60	*27.96	*35.36	*35.44	WSW	10	---	calm	clear
HC 22	07 December 1965	F	0010-0040	0010-0025	0045-0115	22.0	21.5	35.54	36.11	NW	15	---	3' chop	thin overcast
HC 23	13 January 1966	F	2200-2230	2200-2215	2235-2305	20.0	19.7	36.07	36.07	SE	05	---	1' chop	clear
HC 24	14-15 February 1966	F	2325-2355	2325-2340	2400-0030	*19.0	*18.7	*33.8	*33.66	NE	10	---	1-2' chop	clear
HC 25	09 March 1966	F	2150-2220	2150-2205	2225-2255	---	---	---	---	NNE	25	---	6' sea	clear
Repeat HC 25	21-22 March 1966	F	2315-2345	2315-2330	2350-0020	20.2	19.5	35.97	36.23	calm	00	---	calm	clear
HC 26	11 April 1966	F	2225-2255	2225-2240	2300-2330	20.5	19.5	35.92	36.33	calm	00	---	calm	clear
HC 27	11 May 1966	F	2115-2145	2115-2130	2150-2220	23.5	21.5	36.12	36.24	E	20	20	4' sea	overcast
HC 28	12 June 1966	F	2130-2200	2130-2145	2200-2230	28.0	23.0	36.26	36.26	NW	10	06	1' chop	clear
HC 29	05 July 1966	F	2200-2230	2200-2215	2235-2305	28.0	23.0	36.23	36.26	NW	10	40	2' chop	partly cloudy
HC 30	05 August 1966	F	2210-2240	2210-2225	2250-2320	29.0	24.0	36.04	36.19	calm	00	21	calm	clear
HC 31	04 September 1966	F	2200-2230	2200-2215	2240-2310	29.5	25.0	35.76	36.18	WNW	10	25	1' chop	clear
HC 32	12 October 1966	B	2215-2245	2215-2230	2255-2325	28.0	26.0	35.85	36.12	N	18	16	3' chop	clear
HC 33	12 November 1966	B	2200-2230	2200-2215	2240-2310	26.0	25.5	35.90	35.93	N	10	06	1' chop	clear
HC34	06 December 1966	B	2150-2220	2150-2205	2230-2300	22.5	22.5	36.04	36.18	E	15	13	2' chop	clear
HC 35	12 January 1967	B	2230-2300	2230-2245	2305-2335	21.2	20.8	36.23	36.14	NNW	?	08	1' swell	clear
HC 36	15-16 February 1967	B	2315-2345	2315-2330	2355-0025	18.5	18.5	36.16	36.07	calm	00	04	1' chop	clear
HC 37	08 March 1967	B	2150-2220	2150-2205	2230-2300	20.5	18.0	36.19	36.11	N	15	06	2' chop	clear
HC 38	07 April 1967	B	2010-2040	2010-2025	2050-2120	22.5	20.5	36.43	36.24	NW	10	06	2' chop	clear
HC 39	15-16 May 1967	B	*2330-2400*	*2330-2345*	*0010-0040*	25.5	22.5	36.30	36.06	SW	10	20	2' chop	clear
HC 40	6-7 June 1967	B	*2330-2400*	*2330-2345*	*0010-0040*	27.0	22.5	36.48	36.24	N	10	16	½' chop	partly cloudy
HC 41	5-6 July 1967	B	*2315-2345*	*2315-2330*	*2355-0025*	29.5	20.5	36.47	36.28	calm	00	06	1' swell	partly cloudy
HC 42	7-8 August 1967	B	*2330-2400*	*2330-2345*	*0010-0040*	28.5	21.0	34.82	36.40	calm	00	20	½' chop	partly cloudy
HC 43	4-5 September 1967	F	*2255-2325*	*2255-2310*	*2335-0005*	29.0	22.0	35.41	36.45	S	15	09	1' chop	squall
HC 44	11-12 October 1967	B	*2325-2355*	*2325-2340*	*2400-0030*	26.5	23.0	35.71	36.26	NNW	15	12	3' chop	clear
HC 45	14 November 1967	B	2220-2250	2220-2235	2300-2330	21.5	22.0	36.13	36.29	calm	00	18	calm	clear

TABLE 11. FISHERY STATION L

HC 18 through 45 – 26°24'N, 83°22'W

Depth – 180 feet

Cruise number	Date	Trynet type	Sample Time			Temp. °C		Salinity °/oo		General Field Observations				
			trynet	dredge	plankton	sur.	bot.	sur.	bot.	Wind dir.	Wind est. vel. K	Secchi ft.	Water condition	Weather
HC 18	07 August 1965	F	no sample	0855-0910	1015-1045	29.0	19.6	?	?	♦	♦	---	1' chop, clear	clear, some haze on horizon
HC 19	04 September 1965	F	0535-0605	0540-0555	0620-0650	28.5	25.4	36.09	36.28	♦	♦	---	4-6' swell, clear	30% cloud cover
HC 20	13 October 1965	F	0550-0620	0550-0605	0635-0705	*27.52	*23.76	*34.40	*35.96	SE	05	---	1-3' gentle swell	100% cloud cover, rain
HC 21	13 November 1965	F	0425-0455	0425-0440	0455-0525	*25.28	*25.00	*35.56	*35.40	WSW	10	---	1-2' chop	80% cloudy
HC 22	07 December 1965	F	0405-0435	0405-0420	---	22.5	---	---	---	NW	25-30	---	7' sea	clear, too rough to complete sampling, returned to Ft. Myers
Repeat HC 22	13-14 December 1965	F	2350-0020	2350-0005	0035-0155	24.8	22.7	36.28	36.36	E	0-5	---	light swell	♦
HC 23	14 January 1966	F	0150-0220	0150-0205	0225-0255	22.0	21.5	36.33	35.85	SE	15	---	2' chop	clear
HC 24	15 February 1966	F	0255-0325	0255-0310	0330-0400	*20.52	*18.84	*33.92	*33.92	NNE	10	---	2-3' chop	fair
HC 25	22 March 1966	F	0310-0340	0310-0325	0345-0415	20.7	19.5	36.43	36.41	E	10	---	1' chop	clear
HC 26	12 April 1966	F	0210-0240	0210-0225	0245-0315	20.5	19.5	36.43	36.45	ESE	05	---	½' chop	clear
HC 27	12 May 1966	F	0050-0120	0050-0105	0125-0155	24.0	20.0	36.00	36.33	E	20	02	6' sea	overcast, slight drizzle
HC 28	13 June 1966	F	0125-0155	0125-0140	0155-0225	26.0	20.5	36.11	36.26	calm	00	04	calm	clear
HC 29	06 July 1966	F	0210-0240	0210-0225	0245-0315	27.5	21.0	36.06	36.31	calm	00	60	calm	80% thin overcast
HC 30	06 August 1966	F	0155-0225	0155-0210	0235-0305	29.5	21.5	35.63	36.23	calm	00	67	calm	clear
HC 31	05 September 1966	F	0150-0220	0150-0205	0230-0300	29.0	22.0	35.64	36.12	WNW	05	50	calm	clear
HC 32	13 October 1966	B	0205-0235	0205-0220	0250-0320	28.0	23.0	35.92	36.23	E	20	18	4' sea	clear
HC 33	13 November 1966	B	0150-0220	0150-0205	0235-0305	26.0	26.0	35.92	35.92	NNE	10	06	1' chop	clear
HC 34	07 December 1966	B	0140-0210	0140-0155	0225-0255	24.0	24.0	36.12	36.09	E	15	20	3' chop	clear
HC 35	13 January 1967	B	0220-0250	0220-0235	0255-0325	22.0	21.5	36.31	36.26	N	?	09	1' chop	80% cloud cover
HC 36	16 February 1967	B	0300-0330	0300-0315	0345-0415	20.0	19.5	36.35	36.23	NE	03	03	2' chop	partly cloudy
HC 37	09 March 1967	B	0130-0200	0130-0145	0215-0245	21.0	19.5	36.35	36.31	NE	10	06	2' chop	clear
HC 38	08 April 1967	B	0200-0230	0200-0215	0240-0310	22.5	19.5	36.45	36.24	NW	10	06	2' chop	clear
HC 39	16 May 1967	B	*0325-0355*	*0325-0340*	*0405-0435*	26.0	21.0	36.35	36.00	SSW	05	14	2' chop	clear
HC 40	07 June 1967	B	*0330-0400*	*0330-0345*	*0410-0440*	27.0	18.5	36.36	36.18	calm	00	09	½' chop	clear
HC 41	06 July 1967	B	*0300-0330*	*0300-0315*	*0345-0415*	29.0	22.0	♦	36.60	SE	15	09	2' chop	partly cloudy
HC 42	08 August 1967	B	*0315-0345*	*0315-0330*	*0355-0425*	29.5	22.0	36.16	36.52	calm	00	17	½' chop	partly cloudy
HC 43	05 September 1967	F	*0250-0320*	*0250-0305*	*0335-0405*	28.0	21.5	35.48	36.71	SE	08	14	1' chop	partly cloudy
HC 44	12 October 1967	B	*0325-0355*	*0325-0340*	*0410-0440*	26.5	22.5	35.93	36.36	NE	15	06	4' sea	clear
HC 45	15 November 1967	B	0215-0245	0215-0230	0300-0330	23.0	21.5	36.29	36.40	WNW	05	25	½' chop	clear

TABLE 12. FISHERY STATION M

HC 18 through HC 45 – 26°24'N, 83°43'W — Depth – 240 feet

Cruise number	Date	Trynet type	Sample Time			Temp. °C		Salinity °/oo		General Field Observations				
			trynet	dredge	plankton	sur.	bot.	sur.	bot.	Wind dir.	Wind est. vel. K	Secchi ft.	Water condition	Weather
HC 18	07 August 1965	F	---	1250-1305	1315-1345	29.5	17.2	?	?	♦	♦	---	very clear	clear
HC 19	04 September 1965	F	0755-0825	0800-0815	0835-0905	28.3	24.8	36.19	36.31	♦	♦	---	4-6' swell, clear	30% cloud cover, sunny
HC 20	13 October 1965	F	0820-0850	0825-0840	0915-0945	*27.68	*24.24	*35.72	*36.04	SE	12-15	---	2-3' swell, slight chop	100% cloud cover
HC 21	13 November 1965	F	0725-0755	0725-0740	0815-0845	*25.64	*25.60	*35.76	*35.72	calm	00	---	1' swell, clear	cloudy, rain in surrounding area
HC 22	14 December 1965	F	0330-0400	0330-0345	0415-0445	25.3	23.2	36.12	36.43	E	0-5	---	gently rolling to calm	♦
HC 23	14 January 1966	F	0430-0500	0430-0445	0505-0535	23.0	22.0	36.33	36.40	SE	15	---	2-3' chop	clear
HC 24	15 February 1966	F	0535-0605	0535-0550	0610-0640	*21.2	*19.4	*33.88	*33.94	ESE	15	---	3' chop	clear
HC 25	22 March 1966	F	0545-0615	0545-0600	0620-0650	20.7	19.5	36.47	36.35	ESE	12	---	1' chop	clear
HC 26	12 April 1966	F	0455-0525	0455-0510	0530-0600	20.0	18.0	36.35	36.30	SE	10	---	1' chop	clear
HC 27	12 May 1966	F	0315-0345	0315-0330	0350-0420	24.5	20.0	36.16	36.36	E	25	20	6' sea	clear
HC 28	13 June 1966	F	0400-0430	0400-0415	0430-0500	25.5	19.5	35.97	36.26	N	10	26	1' chop	clear
HC 29	06 July 1966	F	0445-0515	0445-0500	0520-0550	27.5	19.0	35.99	36.16	calm	00	100	calm	thin high overcast
HC 30	06 August 1966	F	0425-0455	0425-0440	0510-0540	29.0	19.0	35.25	36.23	SW	10	58	1' chop	50% overcast
HC 31	05 September 1966	F	0430-0500	0430-0445	0515-0545	29.0	19.0	35.35	36.14	calm	00	57	calm	clear
HC 32	13 October 1966	F	0430-0500	0430-0445	0515-0545	28.0	21.5	35.78	36.33	E	20	24	4' sea	clear
HC 33	13 November 1966	B	0430-0500	0430-0445	0515-0545	26.0	23.0	36.00	36.14	NNE	15	06	1' chop	clear
HC 34	07 December 1966	B	0420-0450	0420-0435	0510-0540	24.0	24.0	36.21	36.18	E	15	14	5' sea	clear
HC 35	13 January 1967	B	0455-0525	0455-0510	0535-0605	22.0	21.5	36.28	36.23	NNE	?	10	low swell	overcast
HC 36	16 February 1967	B	0535-0605	0535-0550	0620-0650	21.0	20.5	36.40	36.40	E	10	45	3' chop	partly cloudy
HC 37	09 March 1967	B	0405-0435	0405-0420	0450-0520	21.0	18.5	36.31	36.24	ENE	08	06	1' chop	clear
HC 38	08 April 1967	B	0425-0455	0425-0440	0510-0540	23.0	20.0	36.59	36.43	NNW	05	17	2' chop	clear
HC 39	16 May 1967	B	*0600-0630*	*0600-0615*	*0640-0710*	25.0	21.0	36.23	36.11	N	05	70	1' chop	clear
HC 40	07 June 1967	B	*0555-0625*	*0555-0610*	*0640-0710*	27.0	18.5	36.30	36.19	calm	00	90	calm	partly cloudy
HC 41	06 July 1967	B	*0535-0605*	*0535-0550*	*0620-0650*	29.0	22.5	36.19	36.65	E	15	48	2' chop	partly cloudy
HC 42	08 August 1967	B	*0555-0625*	*0555-0610*	*0640-0710*	29.0	23.0	36.45	36.60	calm	00	110	calm	partly cloudy
HC 43	05 September 1967	F	*0520-0550*	*0520-0535*	*0605-0635*	29.0	21.0	35.88	36.67	SE	05	49	1' chop	partly cloudy
HC 44	12 October 1967	B	*0615-0645*	*0615-0630*	*0605-0635*	26.5	21.0	36.29	36.42	NNE	15	35	4' sea	clear
HC 45	15 November 1967	B	0505-0535	0505-0520	0550-0620	24.0	21.5	36.36	36.45	W	10	45	1' chop	partly cloudy

TABLE 13. RED TIDE STATION F

HC 18 27°03'N, 83°18'W
HC 19 through 45 – 27°03'N, 83°14'W

Depth – HC 18 – 138 feet
HC 19 through 45 – 128 feet

Cruise number	Sample number	Date	Sample Time		Temp. °C				Salinity o/oo			Wind		General Field Observations		
			water	plankton	air	sur.	mid.	bot.	sur.	mid.	bot.	dir.	est. vel. K	Secchi ft.	Water condition	Weather
HC 18	1	05 August 1965	0530	---	28.0	29.0	28.5	24.5	?	?	?	E	15	---	clear, 3-4' swell, slight chop	50% cloud cover
HC 19	7	01 September 1965	0600	---	28.3	28.4	28.6	23.0	35.44	35.73	36.23	ESE	15	---	clear, 4-6' swell, choppy	50% cloud cover, slight haze
HC 20	13	06 October 1965	0615	---	27.5	27.5	27.0	25.0	35.93	35.70	36.18	E	15	---	3-5' swell, slight chop	10% cloud cover
HC 21	19	09 November 1965	1330	---	26.0	24.5	24.0	24.5	35.84	35.62	35.83	NE	10	---	clear, 1' swell	clear, 20% cloud cover on horizon
HC 22	25	04 December 1965	1230	---	21.5	22.0	22.0	22.0	35.87	35.87	35.93	NE	15	50	2' chop	overcast
HC 23	31	04 January 1966	1255	1305-1320	22.4	21.0	21.0	20.5	36.14	36.04	35.97	E	20	105	clear, 3-4' sea	40% thin cloud, sunny
HC 24	37	08 February 1966	1330	1315-1330	21.9	17.5	17.5	17.5	36.06	36,12	36.09	SE	10-15	45	1-2' chop	75% thin high clouds
HC 25	43	05 March 1966	0730	---	20.5	19.0	18.5	18.0	36.02	36.16	36.24	NNW	25	35	6' sea	overcast
HC 26	49	08 April 1966	0545	0735-0750	18.5	19.0	19.5	18.5	35.54	36.14	36.33	E	3-5	54	1' chop	clear
HC 27	55	04 May 1966	0610	0735-0750	23.5	23.5	22.0	20.0	36.33	36.28	36.16	E	15	70	3-4' sea	100% thin overcast
HC 28	61	07 June 1966	1335	1320-1335	28.5	26.5	24.0	22.5	35.74	36.02	36.06	ESE	10	50	3' chop	overcast
HC 29	67	04 July 1966	0520	0645-0700	26.5	27.0	26.0	23.0	36.06	36.09	36.28	NE	05	90	½' chop	clear
HC 30	73	03 August 1966	0530	0645-0700	27.5	28.5	27.0	24.0	36.18	36.21	36.55	SW	10	90	1' chop	clear
HC 31	79	02 September 1966	0615	0730-0745	31.0	29.5	29.5	25.0	36.00	35.78	36.40	ESE	05	60	1' chop	clear
HC 32	85	10 October 1966	0600	0720-0735	27.0	28.0	28.0	25.0	35.61	35.52	36.14	SE	10	52	½' chop	partly cloudy
HC 33	91	10 November 1966	0640	0740-0755	24.0	25.0	25.0	25.0	36.11	36.07	36.14	SE	20	32	5' sea	partly cloudy
HC 34	97	03 December 1966	0630	0730-0745	20.0	22.0	22.0	22.0	35.99	35.92	35.88	NE	08	19	2' chop	clear
HC 35	103	07 January 1967	1500	1445-1500	23.0	21.0	21.0	20.5	36.31	36.31	36.26	ESE	20	46	4' sea	partly cloudy
HC 36	109	07 February 1967	0545	0620-0635	22.5	19.0	19.0	19.0	35.93	36.14	36.16	SW	20	06	6' sea	50% overcast
HC 37	115	04 March 1967	0635	0720-0735	20.0	18.0	18.0	17.5	35.93	36.02	36.04	calm	00	60	calm	clear
HC 38	121	05 April 1967	0610	0715-0730	21.5	20.5	20.5	19.5	36.26	36.33	36.19	N	10	90	1' chop	clear
HC 39	127	13 May 1967	*0620*	*0735-0750*	26.5	25.5	24.5	22.0	36.52	36.55	36.30	calm	00	65	calm	clear
HC 40	133	04 June 1967	*0630*	*0740-0755*	26.0	26.5	22.5	22.0	36.50	36.19	36.21	calm	00	90	calm	partly cloudy
HC 41	139	03 July 1967	*0610*	*0715-0730*	29.5	29.5	25.5	20.5	36.53	36.23	36.19	W	08	63	1' chop	partly cloudy
HC 42	145	02 August 1967	*1445*	*1430-1445*	35.5	30.5	24.5	20.5	34.90	36.23	36.28	SW	03	65	½' chop	partly cloudy
HC 43	151	02 September 1967	*0700*	*0810-0825*	27.0	29.0	29.0	21.0	35.30	35.28	36.31	E	03	66	1' chop	partly cloudy
HC 44	157	07 October 1967	*0700*	*0830-0845*	24.0	26.5	26.5	23.0	35.93	35.90	36.45	calm	00	50	½' swell	partly cloudy
HC 45	163	04 November 1967	0620	0730-0745	21.5	24.0	24.0	22.5	36.09	36.09	36.42	NNW	10	41	1' chop	clear

TABLE 14. RED TIDE STATION G

HC 18 26°43'N, 82°41'W
HC 19 through 45 – 26°44'N, 82°41'W

Depth – 78 feet

Cruise number	Sample number	Date	Sample Time		Temp. °C				Salinity °/oo			General Field Observations				
			water	plankton	air	sur.	mid.	bot.	sur.	mid.	bot.	Wind dir.	Wind est. vel. K	Secchi ft.	Water condition	Weather
HC 18	2	05 August 1965	1030	---	33.0	29.5	29.5	29.8	?	?	?	E	12	---	1-2' swell, clear	75% cloud cover, hazy sun
HC 19	8	01 September 1965	1010	---	31.5	30.0	30.0	27.8	36.16	36.21	36.21	SE	15	---	clear	10% cloud cover, sunny
HC 20	14	06 October 1965	1020	---	32.5	28.0	27.5	26.5	35.87	33.61	34.01	E	15	---	2-4' swell	20% cloud cover, sunny
HC 21	20	09 November 1965	1700	---	24.0	24.0	23.5	23.5	35.52	35.48	35.47	calm	00	---	clear, calm	10% cloud cover on horizon, clear
HC 22	26	04 December 1965	1555	---	21.0	21.0	21.0	21.0	35.32	35.32	35.32	NE	15	45	1' swell	overcast
HC 23	32	04 January 1966	1630	1645-1700	23.0	20.8	20.1	20.5	35.34	35.37	35.56	E	10	72	clear, gentle swell	overcast
HC 24	38	08 February 1966	1705	1650-1705	22.0	19.0	16.0	16.0	35.09	35.16	35.19	SE	05	30	calm	50% cloud cover, surface haze, bright sun
HC 25	44	05 March 1966	1215	---	19.5	19.0	19.0	19.5	35.16	35.21	35.21	NNW	25	35	8' sea	overcast
HC 26	50	08 April 1966	1120	1100-1115	23.0	20.0	19.5	19.5	34.92	35.02	35.97	E	3-5	35	1' chop	clear
HC 27	56	04 May 1966	1155	1135-1150	27.5	24.5	24.5	23.5	35.64	35.61	35.51	ESE	10	55	2-3' chop	80% overcast
HC 28	62	07 June 1966	1735	1720-1735	26.5	26.5	26.5	25.5	35.39	35.39	35.83	ESE	20	35	3' chop	overcast
HC 29	68	04 July 1966	1010	0950-1005	29.5	29.0	27.5	28.0	35.50	35.82	35.90	ENE	10	41	½' chop	50% thin cloud cover
HC 30	74	03 August 1966	1040	1020-1035	31.0	30.5	30.0	29.0	36.31	35.73	36.02	calm	00	40	calm	clear
HC 31	80	02 September 1966	1130	1110-1125	33.5	30.5	30.0	29.0	35.18	35.63	36.14	SE	05	44	1' chop	clear
HC 32	86	10 October 1966	1100	1045-1100	29.0	28.5	28.5	28.5	35.39	35.46	35.52	SE	10	35	½' chop	partly cloudy
HC 33	92	10 November 1966	1045	1030-1045	25.2	25.0	25.0	25.0	36.02	35.97	36.00	S	10	20	3' chop	partly cloudy
HC 34	98	03 December 1966	1120	1105-1120	21.5	22.0	21.5	21.0	35.25	35.27	35.23	NE	08	17	1' chop	clear
HC 35	104	07 January 1967	1900	1845-1900	22.0	20.0	20.0	20.0	36.12	36.16	36.09	S	18	08	3' chop	partly cloudy
HC 36	110	07 February 1967	1010	0950-1005	18.0	18.5	18.5	18.0	35.52	35.61	35.85	NW	20	20	6' sea	100% overcast
HC 37	116	04 March 1967	1105	1050-1105	21.0	18.0	17.5	17.5	35.73	35.76	35.78	SE	05	30	1' chop	fog, sun penetration slight
HC 38	122	05 April 1967	1130	1115-1130	25.0	21.5	21.0	21.0	35.78	35.82	35.95	E	05	53	1' chop	clear
HC 39	128	13 May 1967	*1115*	*1100-1115*	29.0	26.5	25.5	25.5	36.14	36.11	36.14	calm	00	47	calm	clear
HC 40	134	04 June 1967	*1130*	*1115-1130*	30.5	27.5	27.0	24.5	36.33	36.26	36.26	calm	00	68	calm	partly cloudy
HC 41	140	03 July 1967	*1105*	*1050-1105*	32.5	30.0	30.0	29.0	36.02	36.07	36.23	W	08	38	1' chop	partly cloudy
HC 42	146	02 August 1967	*1830*	*1815-1830*	31.5	30.5	30.0	22.5	36.23	36.28	36.24	calm	00	33	½' chop	partly cloudy
HC 43	152	02 September 1967	*1140*	*1125-1140*	27.5	29.5	29.5	24.5	35.48	35.44	36.17	E	10	50	2' chop	partly cloudy
HC 44	158	07 October 1967	*1225*	*1210-1225*	29.0	26.5	26.5	26.0	35.70	35.70	35.91	N	10	23	2' chop	partly cloudy
HC 45	164	04 November 1967	1110	1055-1110	27.0	24.5	24.5	24.5	35.95	35.91	35.93	NNE	08	42	2' chop	partly cloudy

TABLE 15. RED TIDE STATION H

HC 18 through 23 – 26°29'N, 82°16'W
HC 24 through 45 – 26°36'N, 82°16'W

Depth – HC 18 through 23 – 28 feet
HC 24 through 45 – 22 feet

Cruise number	Sample number	Date	Sample Time		Temp. °C				Salinity °/oo			Wind		General Field Observations		
			water	plankton	air	sur.	mid.	bot.	sur.	mid.	bot.	dir.	est. vel. K	Secchi ft.	Water condition	Weather
HC 18	3	05 August 1965	1340	---	36.5	30.2	30.5	30.0	?	?	?	SE	10	---	1-2' swell	50% cloud cover, hazy
HC 19	9	01 September 1965	1450	---	32.7	31.2	31.0	30.7	32.72	35.51	36.02	S	05	---	2-4' gentle swell	30% cloud cover, slight haze, sunny
HC 20	15	06 October 1965	1355	---	37.0	29.0	29.0	29.0	34.51	35.09	35.25	SE	15	---	1-3' swell	20% cloud cover, hazy sun
HC 21	21	09 November 1965	2000	---	22.5	23.0	23.0	22.0	34.81	34.87	35.19	ESE	10	---	1' swell	clear
HC 22	27	04 December 1965	1850	---	20.5	19.5	19.5	19.5	34.83	34.89	34.95	NE	15	---	1' swell	overcast
HC 23	33	04 January 1966	1940	1955-2010	21.5	20.5	20.0	19.5	33.77	34.46	34.70	SE	15	---	gentle swell	30% wispy clouds
HC 24	39	08 February 1966	2045	2030-2045	19.0	15.5	14.0	14.0	32.87	33.23	33.23	SE	10	---	calm	◆
HC 25	45	05 March 1966	1515	---	18.0	20.5	20.5	20.5	34.03	34.03	34.01	NNW	25	03	6' sea	80% cloud cover
HC 26	51	08 April 1966	1420	1400-1415	25.0	21.5	21.5	21.5	34.70	34.68	34.90	SE	5-7	15	1' chop	clear
HC 27	57	04 May 1966	1455	1435-1450	29.5	26.5	26.0	26.5	34.52	34.77	35.18	W	10	20	1' chop	50% overcast
HC 28	63	07 June 1966	2100	2045-2100	25.0	27.0	27.0	27.0	34.23	34.39	34.97	ESE	20	05	3' chop	clear
HC 29	69	04 July 1966	1335	1315-1330	31.0	30.0	29.0	29.5	33.60	34.85	35.25	NNW	10	14	½' chop	30% thin cloud cover
HC 30	75	03 August 1966	1335	1315-1330	34.5	31.5	31.5	31.5	32.63	34.11	34.11	calm	00	09	calm	clear
HC 31	81	02 September 1966	1425	1405-1420	34.0	32.0	32.0	31.5	32.91	34.08	35.39	SE	05	07	½' chop	clear
HC 32	87	10 October 1966	1405	1350-1405	31.0	29.0	29.0	29.0	31.87	32.32	33.99	calm	00	18	calm	100% thin overcast, dull sun
HC 33	93	10 November 1966	1500	1445-1500	26.5	24.0	23.5	23.5	33.94	34.13	34.27	calm	00	07	1' chop	partly cloudy
HC 34	99	03 December 1966	1415	1400-1415	22.5	19.5	19.0	18.5	34.46	34.47	34.34	NE	08	06	½' chop	clear
HC 35	105	07 January 1967	2200	2145-2200	20.0	18.5	18.5	18.5	34.15	34.32	34.30	S	15	02	1' chop	partly cloudy
HC 36	111	07 February 1967	1310	1255-1310	19.0	19.0	19.0	19.0	35.06	35.13	35.06	NW	15	02	3' chop	100% overcast
HC 37	117	04 March 1967	1400	1345-1400	27.0	20.5	18.5	19.0	34.87	34.95	34.95	calm	00	09	calm	partly cloudy
HC 38	123	05 April 1967	1430	1415-1430	28.0	23.0	22.5	22.5	35.56	35.56	35.56	W	05	16	1' chop	clear
HC 39	129	13 May 1967	*1410*	*1355-1410*	30.5	28.5	28.0	28.0	36.52	36.52	36.59	SSW	3-5	11	calm	clear
HC 40	135	04 June 1967	*1425*	*1410-1425*	33.5	30.0	29.0	29.0	36.41	36.38	36.31	W	05	10	calm	partly cloudy
HC 41	141	03 July 1967	*1400*	*1345-1400*	33.5	31.5	31.5	31.5	36.38	36.36	36.50	W	10	12	1' chop	partly cloudy
HC 42	147	02 August 1967	*2125*	*2110-2125*	29.5	30.5	30.5	30.5	35.74	35.93	35.95	N	03	05	½' chop	partly cloudy
HC 43	153	02 September 1967	*1440*	*1425-1440*	34.5	30.5	30.5	30.5	35.43	35.55	35.68	E	05	15	½' chop	partly cloudy
HC 44	159	07 October 1967	*1540*	*1525-1540*	29.0	27.0	26.5	26.5	33.15	34.87	34.97	N	05	16	1' chop	partly cloudy
HC 45	165	04 November 1967	1405	1350-1405	27.0	24.5	24.5	24.5	33.55	34.81	34.92	NNE	08	07	1' chop	partly cloudy

TABLE 16. RED TIDE STATION N

HC 18 – 27°03'N, 83°18'W
HC 19 through 45 – 27°03'N, 83°14'W

Depth – HC 18 – 138 feet
HC 19 through 45 – 128 feet

Cruise number	Sample number	Date	Sample Time		Temp. °C				Salinity °/oo			General Field Observations				
			water	plankton	air	sur.	mid.	bot.	sur.	mid.	bot.	Wind dir.	Wind est. vel. K	Secchi ft.	Water condition	Weather
HC 18	4	08 August 1965	0545	---	27.4	29.2	28.7	23.2	?	?	?	SE	5-7	---	clear, slight chop	30% cloud cover, sun rising
HC 19	10	05 September 1965	0550	---	28.2	28.9	28.7	22.2	31.42	34.08	30.49	NE	20	---	clear	30% cloud cover, dim sunlight
HC 20	16	14 October 1965	0530	---	25.0	26.5	26.5	24.5	35.78	35.64	36.19	SE	25	---	4-6' swell	75% cloudy
HC 21	22	14 November 1965	0715	---	22.0	23.5	23.5	23.5	35.81	35.80	35.84	NE	15	---	3' swell	100% cloud cover
HC 22	28	14 December 1965	1020	---	---	21.5	21.3	21.3	36.04	35.95	36.00	E	0-5	69	calm to gently rolling	fog-visibility 100 yards
HC 23	34	14 January 1966	1105	1045-1100	20.0	19.5	19.5	19.5	35.92	35.92	35.92	SE	15-20	45	3-4' swell, clear	40% haze, sunny
HC 24	40	15 February 1966	1150	1135-1150	20.8	20.0	20.0	18.5	36.33	36.36	36.19	ENE	15	38	3' swell	overcast, fog
HC 25	46	22 March 1966	1400	1410-1425	29.5	20.5	19.0	20.5	35.85	36.19	36.16	E	05	78	1' chop	clear
HC 26	52	13 April 1966	0610	0745-0800	20.5	20.0	20.0	19.0	35.70	36.23	36.31	SE	05	72	1' chop	clear
HC 27	58	12 May 1966	1145	1125-1140	25.0	24.5	24.0	21.5	36.00	36.06	36.18	E	10-15	85	3' chop	clear
HC 28	64	14 June 1966	0540	0700-0715	26.0	26.5	22.5	22.5	35.90	36.21	36.24	SE	05	76	calm	clear
HC 29	70	07 July 1966	0515	0655-0710	27.0	28.0	26.0	23.0	35.83	36.04	36.19	NNW	10	47	2' swell	clear
HC 30	76	07 August 1966	0600	0705-0720	28.0	29.0	28.5	24.5	36.11	36.11	36.35	S-SW	15	90	3' chop	40% overcast
HC 31	82	06 September 1966	0630	0740-0755	30.0	30.5	29.5	25.0	35.71	35.83	36.40	SW	10	60	1' chop	50% overcast
HC 32	88	14 October 1966	0630	0730-0745	26.5	27.5	27.5	25.5	35.66	35.63	36.14	NE	20	66	3-5' sea	overcast
HC 33	94	14 November 1966	0630	0745-0800	22.5	25.5	25.5	25.0	35.87	35.68	35.83	NE	18	25	4' sea	overcast
HC 34	100	08 December 1966	0710	0820-0835	22.0	22.5	22.5	22.0	36.16	36.07	36.09	SE	10	46	3' chop	clear
HC 35	106	14 January 1967	0640	0805-0820	20.5	20.5	20.0	19.8	36.30	36.18	36.19	SSE	12	35	1-2' chop	clear
HC 36	112	16 February 1967	1205	1150-1205	21.5	18.5	18.5	18.5	36.19	36.19	36.16	ESE	10	90	2' chop	clear
HC 37	118	10 March 1967	0645	0735-0750	21.0	19.0	18.5	18.0	36.28	36.16	36.28	ENE	10	65	1' chop	partly cloudy
HC 38	124	09 April 1967	0600	0655-0710	23.0	21.5	21.0	20.0	36.31	36.38	36.24	E	18	46	4' sea	clear
HC 39	130	17 May 1967	*0630*	*0740-0755*	25.0	25.5	24.0	22.0	36.36	36.18	36.06	E	18	61	6' sea	partly cloudy
HC 40	136	08 June 1967	*0623*	*0800-0815*	25.5	26.5	25.0	22.0	36.40	36.45	36.23	calm	00	85	calm	partly cloudy
HC 41	142	07 July 1967	*0630*	*0735-0750*	29.0	29.5	26.0	20.0	36.35	36.07	36.24	SE	18	55	3' chop	partly cloudy
HC 42	148	09 August 1967	*0643*	*0740-0755*	27.0	29.5	25.0	20.5	35.23	36.06	36.31	S	02	47	2' chop	partly cloudy
HC 43	154	06 September 1967	*0655*	*0815-0830*	26.0	29.0	28.5	21.0	35.57	35.50	36.49	E	15	43	5' sea	partly cloudy
HC 44	160	13 October 1967	*0650*	*0815-0830*	23.5	26.0	26.0	23.0	35.61	35.57	36.31	NE	15	21	4' sea	partly cloudy
HC 45	166	16 November 1967	0645	0740-0755	19.0	21.5	21.5	21.0	36.22	36.04	36.22	NE	15	41	4' sea	clear

TABLE 17. RED TIDE STATION O

HC 18 – 27°21'N, 83°03'W
HC 19 through 45 – 27°19'N, 83°00'W

Depth – 78 feet

Cruise number	Sample number	Date	Sample Time		Temp. °C				Salinity o/oo			General Field Observations				
			water	plankton	air	sur.	mid.	bot.	sur.	mid.	bot.	Wind dir.	Wind est. vel. K	Secchi ft.	Water condition	Weather
HC 18	5	08 August 1965	0830	---	31.0	29.3	29.3	29.3	?	?	?	E	8-10	---	clear, slight chop	25% cloud cover, bright sunshine
HC 19	11	05 September 1965	0900	---	29.5	29.9	29.7	27.5	35.58	35.68	35.46	NE	22	---	2-4' swell, chop	70% cloud cover, slight haze
HC 20	17	14 October 1965	0845	---	24.5	26.0	26.0	25.0	35.46	35.59	35.87	NE	25	---	4-6' swell, clear	100% cloud cover
HC 21	23	14 November 1965	0930	---	22.0	22.5	23.0	23.0	34.68	34.65	35.43	NE	15	---	3' swell, clear	100% cloud cover
HC 22	29	14 December 1965	1240	---	---	19.8	19.7	20.0	35.25	35.54	35.63	E	0-5	57	calm to slightly rolling	40% cloud cover
HC 23	35	14 January 1966	1330	1310-1325	20.0	18.5	18.5	18.5	35.01	34.94	35.30	SE	15	40	2' swell, clear	20% cloud cover, sunny
HC 24	41	15 February 1966	1415	1400-1415	21.2	17.0	17.0	17.0	35.18	35.27	35.34	NE	10	45	2' swell	clear, sunny, horizon cloudy
HC 25	47	22 March 1966	1645	1625-1640	24.0	20.0	18.0	18.5	34.23	35.59	35.56	NNE	05	57	calm	clear
HC 26	53	13 April 1966	1040	1020-1035	23.0	20.0	19.5	20.0	34.75	34.85	35.92	E	10	65	1' chop	clear
HC 27	59	12 May 1966	1405	1345-1400	27.0	24.8	24.5	25.0	35.39	35.35	35.37	E	05	42	2' swell	clear, sunny
HC 28	65	14 June 1966	0935	0920-0935	29.5	27.5	26.5	26.5	35.85	35.66	35.78	SE	05	30	calm	clear
HC 29	71	07 July 1966	0940	0925-0940	28.5	28.5	28.5	28.0	35.56	35.63	35.85	N	10	37	2' chop	80% patchy overcast
HC 30	77	07 August 1966	0940	0920-0935	29.5	30.0	30.0	29.0	35.82	35.85	36.06	SE	15	50	3' chop	40% overcast
HC 31	83	06 September 1966	1020	1000-1015	32.0	30.5	30.5	28.5	35.52	35.54	35.97	WNW	10	47	1' chop	50% overcast
HC 32	89	14 October 1966	0955	0940-0955	26.0	27.5	27.5	27.5	35.46	35.42	35.34	NE	20	68	4-5' sea	clear
HC 33	95	14 November 1966	1030	1015-1030	21.0	24.5	24.5	24.0	35.82	35.83	35.85	NE	20	32	4' sea	overcast
HC 34	101	08 December 1966	1050	1035-1050	22.5	20.5	20.5	20.0	35.39	35.39	35.39	SE	10	32	3' chop	clear
HC 35	107	14 January 1967	1025	1010-1025	21.5	18.8	18.8	19.2	35.32	35.50	35.47	E	12	39	1-2' chop	clear, scattered clouds
HC 36	113	16 February 1967	1425	1410-1425	22.5	18.5	17.5	17.5	35.61	35.63	35.74	ESE	08	45	1' chop	clear
HC 37	119	10 March 1967	1015	1000-1015	22.5	18.5	18.0	17.5	35.40	35.51	35.54	E	10	30	½' chop	clear, low fog
HC 38	125	09 April 1967	0940	0925-0940	23.0	22.0	21.5	20.5	35.34	35.35	35.95	E	18	34	4' chop	clear
HC 39	131	17 May 1967	*1055*	*1040-1055*	24.5	25.5	25.5	25.0	35.92	35.85	35.97	E	18	41	4' sea	partly cloudy
HC 40	137	08 June 1967	*1045*	*1030-1045*	27.5	27.5	25.5	24.5	36.19	36.21	36.19	SE	05	43	1' chop	partly cloudy
HC 41	143	07 July 1967	*1015*	*1000-1015*	28.0	30.0	30.0	28.0	36.28	36.30	36.28	SE	08	26	3' chop	partly cloudy
HC 42	149	09 August 1967	*1035*	*1020-1035*	32.0	30.0	30.0	30.0	36.07	36.16	36.11	W	05	24	1' chop	partly cloudy
HC 43	155	06 September 1967	*1050*	*1035-1050*	27.0	29.0	29.0	25.0	35.50	35.50	36.22	E	15	30	3' chop	partly cloudy
HC 44	161	13 October 1967	*1140*	*1125-1140*	25.5	25.5	25.5	25.5	35.62	35.64	35.68	NE	15	22	4' sea	clear
HC 45	167	16 November 1967	1035	1020-1035	21.0	21.0	21.0	21.0	35.82	35.81	35.84	NE	15	39	4' sea	clear

TABLE 18. RED TIDE STATION P

HC 18 through 45 – 27°35'N, 82°51'W

Depth – 20 feet

Cruise number	Sample number	Date	Sample Time		Temp. °C				Salinity o/oo			General Field Observations				
			water	plankton	air	sur.	mid.	bot.	sur.	mid.	bot.	Wind dir.	Wind est. vel. K	Secchi ft.	Water condition	Weather
HC 18	6	08 August 1965	1035	---	32.0	29.8	29.8	29.8	?	?	?	SE	5-7	---	slight chop	15% cloud cover, bright sunshine
HC 19	12	05 September 1965	1105	---	31.2	30.4	30.3	30.2	34.68	?	?	NE	15	---	bright green with algal bloom	30% cloud cover, slight haze, sunny
HC 20	18	14 October 1965	1035	---	24.0	26.0	26.0	25.5	34.03	34.01	33.96	NE	25	---	2-4' swell, clear	100% cloud cover
HC 21	24	14 November 1965	1115	---	22.0	23.0	23.0	22.5	33.14	33.11	33.06	NE	15	---	3' swell, clear	20% cloud cover, sunny
HC 22	30	14 December 1965	1420	---	---	18.2	18.2	18.4	33.05	33.20	33.79	calm	00	18	clear, calm	80% cloud cover
HC 23	36	14 January 1966	1520	1500-1515	21.0	18.5	18.5	18.5	34.03	34.03	34.03	SE	15	20	1' swell, clear	50% cloud cover, hazy sun
HC 24	42	15 February 1966	1605	1550-1605	21.5	18.0	17.5	17.0	32.82	32.63	32.87	NE	10	10	calm	clear, sunny, horizon cloudy
HC 25	48	22 March 1966	1835	1830-1845	20.0	20.0	19.5	19.5	33.41	33.70	33.94	NNE	05	---	calm	clear
HC 26	54	13 April 1966	1240	1215-1230	26.0	21.5	20.5	21.5	34.85	34.83	34.87	E	05	20	½' chop	clear
HC 27	60	12 May 1966	1600	1545-1600	28.0	26.0	26.0	26.0	34.97	34.92	34.95	E	7-10	20	2' swell	clear, sunny
HC 28	66	14 June 1966	1125	1110-1125	33.5	29.5	27.5	27.5	34.94	35.32	35.19	calm	00	06	calm	50% overcast
HC 29	72	07 July 1966	1145	1125-1140	29.0	29.0	29.0	28.0	34.97	34.94	35.35	N	15	13	3' chop	80% patchy overcast
HC 30	78	07 August 1966	1200	1140-1155	30.5	31.0	31.0	31.0	35.47	35.39	35.46	NW	15	10	2' chop	50% overcast
HC 31	84	06 September 1966	1220	1200-1215	34.0	31.0	31.0	31.0	33.94	33.97	34.22	SSW	10	10	1' chop	90% overcast
HC 32	90	14 October 1966	1150	1135-1150	26.0	27.5	27.5	27.5	34.44	34.49	34.51	E	20	11	3' chop	clear
HC 33	96	14 November 1966	1250	1235-1250	21.0	23.0	22.5	23.0	33.99	34.01	34.78	NE	15	08	2' chop	patchy overcast
HC 34	102	08 December 1966	1235	1220-1235	22.5	19.0	19.0	18.5	33.49	33.39	33.48	calm	00	12	2' chop	clear
HC 35	108	14 January 1967	1205	1150-1205	21.0	19.0	18.4	19.0	33.58	33.58	33.73	E	12	08	1-2' chop	clear, scattered clouds
HC 36	114	16 February 1967	1615	1600-1615	25.0	17.5	18.5	18.0	34.30	34.59	34.71	calm	00	21	½' chop	clear
HC 37	120	10 March 1967	1150	1135-1150	25.5	20.0	19.5	18.5	34.01	34.13	34.49	calm	00	13	calm	◆
HC 38	126	09 April 1967	1130	1115-1130	26.0	22.5	22.5	22.5	34.94	35.02	35.07	E	15	13	2' chop	partly cloudy, hazy sun
HC 39	132	17 May 1967	*1250*	*1235-1250*	28.5	27.5	27.5	27.5	35.82	35.76	35.80	NE	18	08	3' chop	partly cloudy
HC 40	138	08 June 1967	*1250*	*1235-1250*	32.0	28.5	28.0	27.5	36.04	35.95	35.97	NE	02	13	1' chop	partly cloudy
HC 41	144	07 July 1967	*1205*	*1150-1205*	30.5	30.5	30.5	30.5	36.16	36.18	36.12	SE	10	06	3' chop	partly cloudy
HC 42	150	09 August 1967	*1210*	*1155-1210*	33.0	30.5	30.5	30.5	36.00	35.95	36.04	SE	10	14	1' chop	partly cloudy
HC 43	156	06 September 1967	*1235*	*1220-1235*	28.5	29.5	29.5	29.5	34.60	35.01	35.01	E	05	12	1' chop	partly cloudy
HC 44	162	13 October 1967	*1335*	*1320-1335*	26.5	25.0	25.0	25.0	34.88	34.90	34.96	NE	15	18	2' chop	clear
HC 45	168	16 November 1967	1225	1210-1225	21.0	19.0	19.0	19.0	34.20	34.20	34.13	NE	10	17	2' chop	clear

TABLE 19. SUPPLEMENTARY RED TIDE STATION

Estero Pier (Ft. Myers Beach)

HC 30 through 45 – 26°27'N, 81°58'W

Depth – 15 feet

Cruise number	Date	Sample time	Temp. °C		Salinity o/oo	General Field Observations				
						Wind		Secchi	Water	
			air	sur.	sur.	dir.	est. vel. K	ft.	condition	Weather
HC 30	03 August 1966	1650	33.5	32.5	27.83	NW	10	05	½' chop	clear
HC 31	02 September 1966	◆	31.5	31.5	---	SE	10	04	light chop	30% overcast
HC 32	10 October 1966	◆	29.0	29.0	---	NW	10	---	1' chop	partly cloudy
HC 33	10 November 1966	1800	---	23.5	---	calm	00	05	calm	partly cloudy
HC 34	03 December 1966	1700	21.0	18.0	---	NE	08	05	½' chop	partly cloudy
HC 35	08 January 1967	0200	21.0	19.0	---	S	10	---	calm	partly cloudy
HC 36	07 February 1967	1615	18.0	◆	---	NNW	15	02	2' chop	100% overcast
HC 37	04 March 1967	1650	24.5	21.0	37.17	NW	05	06	½' chop	partly cloudy
HC 38	05 April 1967	1720	24.5	23.0	---	NW	12	05	1' chop	partly cloudy
HC 39	13 May 1967	*1655*	29.0	29.0	---	SW	05	04	1' chop	clear
HC 40	04 June 1967	*1715*	32.5	29.5	37.17	WSW	10	04	1' chop	partly cloudy
HC 41	03 July 1967	*1705*	31.5	31.5	31.98	W	15	04	1' chop	partly cloudy
HC 42	03 August 1967	*0035*	28.0	30.5	32.30	NNW	10	05	1' chop	clear
HC 43	02 September 1967	*1745*	33.5	30.5	31.29	E	15	03	½' chop	squall
HC 44	07 October 1967	*1835*	27.5	26.5	29.29	N	10	06	1' chop	partly cloudy
HC 45	04 November 1967	1700	25.5	25.0	32.29	NW	15	05	2' chop	clear

TABLE 20. SCUBA OBSERVATIONS

Cruise number and Station	Date	Location lat.	Location long.	Time	Temp. °C sur.	Temp. °C bot.	Salinity o/oo sur.	Salinity o/oo bot.	Depth ft.	Bottom	General Field Observations: Wind dir.	Wind est. vel. K	Secchi ft.	Water condition	Weather
SCUBA HC 41 Station															
A	25 July 1967	27°35'	82°50'	*1030-1130*	30.0	30.0	35.56	35.71	20	sand, shell	SE	08	07	½' chop	partly cloudy
B	25 July 1967	27°37'	83°07'	*1440-1935*	31.0	31.0	35.36	36.47	60	low limestone reef	SW	08	30	1' chop	partly cloudy
C	26 July 1967	27°37'	83°28'	*1600-1700*	29.5	21.0	34.82	36.18	120	sponge, algae, sand	SW	03	100	½' chop	partly cloudy
SCUBA HC 42 Station															
I	05 August 1967	26°24'	82°06'	*0930-1100*	30.5	30.5	36.11	36.11	20	shell, sand	SW	15	11	3' chop	partly cloudy
K	06 August 1967	26°24'	82°58'	*1045-1105*	29.5	20.5	34.59	36.35	120	sand, algae	SE	05	61	3' chop	partly cloudy
J	06 August 1967	26°24'	82°28'	*1500-1700*	30.5	27.5	36.21	36.26	60	low limestone reef, algae	calm	00	48	1' chop	partly cloudy

TABLE 21. STATION F TRAPPING

HC 26 through 45 – 27°03'N, 83°14'W

Depth – 128 feet

Cruise number	Date	Traps			Temp. °C		Salinity °/oo		General Field Observations				
		no.	bait	time	sur.	bot.	sur.	bot.	Wind dir.	Wind est. vel. K	Secchi ft.	Water condition	Weather
HC 26	7-8 April 1966	6	conch, mullet	1415-0730	19.0	18.5	35.54	36.33	NE	3-5	54	1' chop	clear
HC 27	3-4 May 1966	6	◆	1405-0745	23.5	20.0	36.33	36.16	E	15	70	3-4' sea	100% thin overcast
HC 29	3-4 July 1966	7	grouper heads	1800-0645	27.0	23.0	36.06	36.28	NE	05	90	½' chop	clear
HC 30	2-3 August 1966	6	◆	1330-0640	28.5	24.0	36.18	36.55	SW	10	90	1' chop	clear
HC 31	1-2 September 1966	6	crevalle jack	1420-0630	29.5	25.0	36.00	36.40	SE	10	60	1' chop	50% overcast
HC 32	9-10 October 1966	6	◆	1215-0700	28.0	25.0	35.61	36.14	SE	10	52	½' chop	partly cloudy
HC 33	9-10 November 1966	6	◆	1400-0730	25.0	25.0	36.11	36.14	SE	20	32	5' sea	partly cloudy
HC 34	2-3 December 1966	6	grouper heads	1400-0730	22.0	22.0	35.99	35.88	NE	08	19	2' chop	clear
HC 37	3-4 March 1967	6	red snapper carcass	1300-0715	18.0	17.5	35.93	36.04	calm	00	60	calm	clear
HC 38	4-5 April 1967	6	bonito	1230-0710	20.5	19.5	36.26	36.19	N	10	90	1' chop	clear
HC 39	12-13 May 1967	6	bonito	*1530-0730*	25.5	22.0	36.52	36.30	calm	00	65	calm	clear
HC 40	3-4 June 1967	6	bonito	*1415-0740*	26.5	22.0	36.50	36.21	calm	00	90	calm	partly cloudy
HC 41	2-3 July 1967	6	bonito	*1430-0715*	29.5	20.0	36.53	36.19	W	08	63	1' chop	partly cloudy
HC 43	1-2 September 1967	6	salted shark	*1430-0810*	29.0	21.0	35.30	36.31	E	03	66	1' chop	partly cloudy
HC 44	6-7 October 1967	6	salted shark	*1430-0810*	26.5	23.0	35.93	36.45	calm	00	50	½' swell	partly cloudy
HC 45	3-4 November 1967	6	mullet	1400-0725	24.0	22.5	36.09	36.42	NNW	10	41	1' chop	clear

TABLE 22. STATION N TRAPPING

HC 26 through 45 – 27°03'N, 83°14'W — Depth – 128 feet

Cruise number	Date	Traps			Temp. °C		Salinity o/oo		General Field Observations: Wind		Secchi	Water	Weather
		no.	bait	time	sur.	bot.	sur.	bot.	dir.	est. vel. K	ft.	conditions	
HC 26	12-13 April 1966	6	conch, mullet	1225-0740	20.0	19.0	35.70	36.31	E	3-5	54	1' chop	clear
HC 28	13-14 June 1966	6	shark	1600-0700	26.5	22.5	35.90	36.24	SE	05	76	calm	clear
HC 29	6-7 July 1966	7	permit	1200-0645	28.0	23.0	35.83	36.19	NNW	10	47	2' swell	clear
HC 30	6-7 August 1966	6	crevalle jack	1130-0700	29.0	24.5	36.11	36.35	S-SW	15	90	3' chop	40% overcast
HC 31	5-6 September 1966	6	crevalle jack	1230-0700	30.5	25.0	35.71	36.40	SW	10	60	1' chop	50% overcast
HC 32	13-14 October 1966	6	◆	1230-0725	27.5	25.5	35.66	36.14	E	20	52	4-5' sea	clear
HC 33	13-14 November 1966	6	◆	1200-0745	25.5	25.0	35.87	35.83	NE	18	25	1' chop	overcast
HC 34	7-8 December 1966	6	crevalle jack	1100-0815	22.5	22.0	36.16	36.09	SE	10	46	3' chop	clear
HC 35	13-14 January 1967	6	jewfish head, crevalle jack	1330-0800	20.5	19.8	36.30	36.19	E	12	35	1-2' chop	clear
HC 37	9-10 March 1967	6	crevalle jack (cut)	1130-0730	19.0	18.0	36.28	36.28	ENE	10	65	1' chop	partly cloudy
HC 38	8-9 April 1967	6	crevalle jack	1250-0655	21.5	20.0	36.31	36.24	E	18	46	4' sea	clear
HC 39	16-17 May 1967	6	crevalle jack	*1215-0730*	25.5	22.0	36.36	36.06	E	18	61	6' sea	partly cloudy
HC 40	7-8 June 1967	6	crevalle jack	*1400-0745*	26.5	22.0	36.40	36.23	calm	00	85	calm	partly cloudy
HC 41	6-7 July 1967	6	crevalle jack	*1300-0735*	29.5	20.0	36.35	36.24	SE	18	55	3' chop	partly cloudy
HC 42	8-9 August 1967	6	salted shark	*1250-0740*	29.5	20.5	35.23	36.31	S	02	47	2' chop	partly cloudy
HC 43	5-6 September 1967	6	salted shark	*1400-0810*	29.0	21.0	35.57	36.49	E	15	43	5' sea	partly cloudy
HC 44	12-13 October 1967	6	salted shark	*1400-0815*	26.0	23.0	35.61	36.31	NE	15	21	4' sea	partly cloudy
HC 45	15-16 November 1967	6	crevalle jack	1150-0740	21.5	21.0	36.22	36.22	NE	15	41	4' sea	clear

TABLE 23. OTTER TRAWL SAMPLES – SUPPLEMENTARY CRUISES

Cruise number and Station	Date	Sample time	Temp. °C		Salinity o/oo		General Field Observations				
							Wind		Secchi ft.	Water conditions	Weather
			sur.	bot.	sur.	bot.	dir.	est. vel. K			
Sup. HC 29											
Station											
A	18 July 1966	1815-1845	30.5	30.5	34.73	34.89	SSE	10	06	1' chop	overcast
B	18 July 1966	2020-2050	29.5	28.5	35.82	35.78	NW	15	10	1' chop	20% overcast
C	18 July 1966	2330-2400	29.0	23.5	35.93	36.41	NW	10	10	1' chop	clear
D	19 July 1966	0300-0330	28.5	21.5	36.00	36.43	calm	00	10	calm	clear
E	19 July 1966	0505-0535	28.5	19.5	35.39	36.26	calm	00	90	calm	clear
I	21 July 1966	1800-1830	30.0	30.0	34.46	34.42	NW	15	06	3' chop	80% overcast
J	21 July 1966	2030-2100	29.5	28.5	35.66	35.83	NW	10	03	3' chop	partly cloudy
K	22 July 1966	0020-0050	28.5	24.0	35.85	36.38	NW	10	06	3' chop	clear
L	22 July 1966	0445-0515	28.5	21.0	35.80	36.36	WSW	10	90	3' chop	clear
M	22 July 1966	0715-0745	28.5	20.0	35.63	36.31	WSW	10	90	3' chop	80% overcast
Sup. HC 35											
Station											
A	25 January 1967	1810-1840	18.5	18.0	33.63	34.47	calm	00	---	1' chop	dark
B	25 January 1967	2035-2105	18.5	17.3	34.95	35.93	◆	◆	---	1½' chop	bright (moonlight)
C	25 January 1967	2330-2400	19.4	19.0	36.11	35.95	◆	◆	---	1½' chop	very bright (moonlight)
D	26 January 1967	0255-0325	20.0	19.5	36.11	36.04	◆	15-18	---	3'chop	◆
E	26 January 1967	0505-0535	20.5	19.5	36.19	36.12	◆	18-20	---	5' swell	◆
I	30 January 1967	1800-1830	18.5	18.5	34.90	34.92	NW	10	03	1' chop	clear
J	30 January 1967	2020-2050	18.5	18.5	35.46	35.56	NW	10	10	2' chop	clear
K	30 January 1967	2340-2410	19.0	18.0	36.14	36.21	NW	10	40	2' chop	clear
L	31 January 1967	0310-0340	20.0	18.0	36.28	36.23	NW	15	48	2' chop	clear
M	31 January 1967	0525-0555	21.5	20.5	36.31	36.28	NNE	10	50	2' chop	clear

TABLE 24. NIGHT-LIGHT SAMPLES

Cruise number	Date	Station	Depth ft.	Location lat.	Location long.	Time	Temp. °C sur.	Temp. °C bot.	Salinity °/oo sur.	Salinity °/oo bot.	General Field Observations: Wind dir.	Wind est. vel. K	Secchi ft.	Water condition	Weather
HC 32	09 October 1966	F	128	27°03'	83°14'	2100-2300	28.0	25.0	35.61	36.14	SE	10	52	½' chop	partly cloudy
Post HC 37	15 March 1967	*X*	180	26°25'	83°26'	1900-2100	22.0	18.5	36.43	36.26	NW	15-20	75	5-6' sea	overcast
HC 38	04 April 1967	F	128	27°03'	83°14'	1930-2030	20.5	19.5	36.26	36.19	N	10	90	1' chop	clear
HC 38	08 April 1967	N	128	27°03'	83°14'	1900-2100	22.0	20.0	36.31	36.24	NW	05	---	1' swell	clear
Post HC 38	12 April 1967	*X*	80	27°56'	83°19'	2000-2100	26.0	22.5	35.27	35.90	SE	20	---	1' chop	clear
SCUBA HC 41	25 July 1967	B	60	27°37'	83°07'	*2130-2230*	31.0	31.0	35.36	36.47	SW	08	30	1' chop	partly cloudy
SCUBA HC 42	05 August 1967	K	120	26°24'	82°58'	*2200-2300*	29.5	20.5	34.59	36.35	SE	05	60	3' chop	partly cloudy
HC 42	08 August 1967	N	128	27°03'	83°14'	*2100-2200*	29.5	20.5	35.23	36.31	S	02	47	2' chop	partly cloudy
Post HC 42	26 August 1967	*X*	50	28°06'	83°07'	*2130-2230*	29.5	29.5	35.86	35.88	calm	00	42	calm	partly cloudy
HC 43	01 September 1967	F	128	27°03'	83°14'	*2030-2130*	29.0	21.0	35.30	36.31	E	03	66	1' chop	partly cloudy
HC 43	05 September 1967	N	128	27°03'	83°14'	*2030-2200*	29.0	21.0	35.57	36.49	E	15	43	5' sea	partly cloudy

NOTE: Temperatures, salinities, and general field observations were usually taken on the morning following night-light samples. Since this sampling can only be accomplished in a relatively calm sea, field observations indicate a significant change in conditions between the time of sampling and the recording of these observations.

TABLE 25. POST HC TRAPPING

Cruise number	Date	Location			Traps			Additional gear	
		sta.	lat.	long.	no.	bait	time	type	time
Post HC 18	26-27 August 1965	D	27°37'	83°58'	5	◆	2130-0800	---	---
Post HC 20	20-21 October 1965	X	27°44'	84°10'	13	◆	2010-0930	---	---
	21 October 1965	X	27°06'	83°15'	---	---	---	O	1830-1930
	21-22 October 1965	X	27°08'	83°11'	5	◆	2040-0645	---	---
Post HC 21	19-20 November 1965	X	27°45'	84°11'	8	◆	2355-0750	---	---
Post HC 25	27-28 March 1966	X	27°45'	84°10'	12	mullet	1745-1030	---	---
	28 March 1966	X	27°45'	84°10'	---	---	---	F	1115-1145
	28 March 1966	X	27°45'	84°10'	---	---	---	F	1210-1240
	28-29 March 1966	X	27°45'	84°10'	12	mullet	1030-0845	---	---
Post HC 26	15-16 April 1966	C	27°37'	83°28'	6	grouper heads	1640-1000	---	---
	16-17 April 1966	X	27°28'	83°47'	12	grouper heads	1755-0730	---	---
	17-18 April 1966	X	27°32'	83°10'	†12	◆	1345-0700	---	---
Post HC 27	18-19 May 1966	C	27°37'	83°28'	6	mullet	1800-1015	---	---
	19-20 May 1966	X	27°24'	83°27'	12	mullet, conch	1930-1200	---	---
	20-21 May 1966	X	27°24'	83°27'	12	mullet	1200-1230	---	---
	21-22 May 1966	X	27°24'	83°27'	12	mullet, crevalle jack	1230-1000	---	---
Post HC 28	17-18 June 1966	C	27°37'	83°28'	6	grouper heads	1800-1010	---	---
	18-19 June 1966	X	27°19'	83°50'	12	grouper heads	1540-0715	---	---
	19-20 June 1966	X	27°19'	83°50'	13	grouper heads	1540-0600	---	---
	20 June 1966	X	27°19'	83°50'	---	---	---	O	1000-1100
	20 June 1966	X	27°19'	83°50'	---	---	---	O	1100-1200
	20-21 June 1966	X	27°19'	83°50'	13	grouper heads	0930-0600	---	---
Post HC 29	10-11 July 1966	C	27°37'	83°28'	7	crevalle jack	1735-0950	---	---
	12-13 July 1966	X	27°43'	84°10'	13	crevalle jack	1700-1015	---	---
	13-14 July 1966	X	27°43'	84°10'	13	crevalle jack	1015-1030	---	---
	14 July 1966	X	27°43'	84°10'	---	---	---	O	1645-1730
	14-15 July 1966	X	27°43'	84°10'	13	crevalle jack	1030-0810	---	---
Post HC 30	10-11 August 1966	C	27°37'	83°28'	6	mullet	1830-1030	---	---
	11-12 August 1966	X	28°06'	83°43'	12	mullet	1930-0900	---	---
	12-13 August 1966	X	28°06'	83°43'	12	mullet	0900-0900	---	---
	13 August 1966	X	28°06'	83°43'	---	---	---	O	1435-1535
	13-14 August 1966	X	28°06'	83°43'	12	mullet	0900-0800	---	---
Post HC 31	26-27 September 1966	X	26°08'	82°52'	12	crevalle jack	2330-1400	---	---
	27-28 September 1966	X	26°08'	82°52'	12	crevalle jack	1400-0800	---	---
Post HC 32	18-19 October 1966	X	27°36'	83°41'	6	mullet	1630-0915	---	---
Post HC 33	19-20 November 1966	X	27°37'	83°46'	6	mullet	1730-0930	---	---
	20-21 November 1966	X	27°46'	84°10'	12	mullet	1730-1430	---	---
	21 November 1966	X	27°46'	84°10'	---	---	---	O	1200-1300
Post HC 34	13-14 December 1966	X	27°37'	83°56'	6	mullet	1730-1030	---	---
	14-15 December 1966	X	27°47'	84°09'	12	◆	1600-1100	---	---
	15 December 1966	X	27°47'	84°09'	---	---	---	O	0800-0840
	15-16 December 1966	X	27°53'	83°04'	12	◆	1815-0900	---	---
Post HC 35	20-21 January 1967	C	27°37'	83°28'	6	mullet	1630-0900	---	---
	21-22 January 1967	X	27°28'	83°20'	12	mullet	1730-1200	---	---
	22-23 January 1967	X	28°00'	83°05'	7	mullet	1830-1130	---	---
Post HC 37	14-15 March 1967	D	27°37'	83°58'	6	◆	1800-0930	---	---
	15-16 March 1967	X	26°25'	83°26'	12	red snapper carcass (aged)	1800-1000	---	---
Post HC 38	11-12 April 1967	C	27°37'	83°28'	6	bonito	1700-0845	---	---
	12-13 April 1967	X	27°56'	83°19'	12	crevalle jack (cut)	1815-0915	---	---
	13-14 April 1967	X	27°55'	83°10'	12	◆	1445-0835	---	---
Post HC 39	20-21 May 1967	X	27°37'	83°50'	6	◆	*2000-0940*	---	---
	21-22 May 1967	X	27°52'	83°11'	12	bonito	*2030-1130*	---	---

Depth ft.	Temp. ℃ sur.	Temp. ℃ bot.	Salinity o/oo sur.	Salinity o/oo bot.	General Field Observations: Wind dir.	Wind est. vel. K	Secchi ft.	Water condition	Weather
180	◆	◆	35.61	36.26	◆	◆	- - -	slight roll, calm, clear	20% cloud cover, sunny, some haze
156	*26.24	*25.08	*35.20	*35.60	calm	00	- - -	clear, calm	hazy, dull sun
126	*26.08	*23.76	*35.04	*35.28	SW	10	- - -	1' chop, clear	90% cloud cover
106	*25.88	*23.72	*35.04	*35.52	SW	05	- - -	clear, calm	100% cloud cover, rain
180	24.0	23.5	36.04	36.04	N	10	- - -	clear, calm	20% cloud cover, sunny
- ↓ -	- ↓ -	- ↓ -	- ↓ -	- ↓ -	calm	10	- ↓ -	calm to 2' chop	80% thin overcast
150	19.0	18.5	36.38	36.41	NW	10	62	2' chop	50% cloud cover with haze
- ↑ -	- ↑ -	- ↑ -	- ↑ -	- ↑ -	NW	15	- - -	4' sea	100% haze
150	18.5	18.0	36.38	36.26	NW-E	10	60	2' chop	overcast, rain
120	20.5	19.0	35.88	36.35	NNW	10-12	80	2' chop	overcast
156	20.0	19.0	36.33	36.33	E	20	55	6' sea	clear
94	20.0	19.0	35.23	36.11	ESE	22-25	- - -	6-8' sea	clear
120	25.2	21.8	36.24	36.21	SE	10	60	2' chop	80% overcast
125-130	25.5	21.0	36.09	36.24	S	10	85	1' chop	clear
125-130	26.5	22.0	36.26	36.21	S	07	85	1' chop	60% thin overcast
125	- ↑ -	- ↑ -	- ↑ -	- ↑ -	W	10	80	1' chop	80% overcast
120	27.0	22.5	36.04	36.24	SW	15	90	1' chop	50% overcast
180	27.0	22.0	35.85	36.35	WNW	10	90	2' chop	30% overcast
- ↓ -	- ↓ -	- ↓ -	- ↓ -	- ↓ -	- ↓ -	- ↓ -	- ↓ -	- ↓ -	- ↓ -
- ↓ -	- ↓ -	- ↓ -	- ↓ -	- ↓ -	- ↓ -	- ↓ -	- ↓ -	- ↓ -	- ↓ -
180	29.0	21.0	36.00	36.33	calm	00	90	calm	40% overcast
180	- ↑ -	- ↑ -	- ↑ -	- ↑ -	E	20	75	3' chop	100% overcast
120	28.0	23.5	35.80	36.07	SE	10	90	2' chop	75% overcast
155-160	- ↓ -	- ↓ -	- ↓ -	- ↓ -	SE	05	90	calm	80% overcast
150	- ↓ -	- ↓ -	- ↓ -	- ↓ -	- ↓ -	- ↓ -	- ↓ -	- ↓ -	- ↓ -
150-160	28.0	20.5	34.56	36.26	SE	15	90	3' chop	overcast
150-160	- ↑ -	- ↑ -	- ↑ -	- ↑ -	SE	10-12	90	3' chop	80% overcast
120	29.0	24.5	35.90	36.28	SE	15	90	6' sea	90% overcast
110	29.0	27.5	35.99	36.00	SE	15	62	3' chop	50% overcast
- ↓ -	- ↓ -	- ↓ -	- ↓ -	- ↓ -	- ↓ -	- ↓ -	- ↓ -	- ↓ -	- ↓ -
110	29.0	28.0	35.87	36.09	SE	15	70	3' chop	30% overcast
110	29.0	28.5	36.07	35.95	S	10	67	2' chop	50% overcast
120	29.0	26.0	- ↓ -	- ↓ -	SSE	15	90	6' sea	overcast
120	29.0	26.0	35.66	36.21	S	20	- - -	10' sea	80% thin overcast
144	- - -	- - -	- - -	- - -	SSW	5-10	- - -	3' chop	◆
144	24.5	24.0	35.99	35.92	NNW	10	50	2' chop	clear
- ↓ -	◆	◆	- ↓ -	- ↓ -	- ↓ -	- ↓ -	- ↓ -	- ↓ -	- ↓ -
160	◆	◆	35.99	35.99	NE	18	60	5' sea	partly cloudy
160	- - -	- - -	- - -	- - -	N	15	28	4' sea	partly cloudy
- ↓ -	- ↓ -	- ↓ -	- ↓ -	- ↓ -	- ↓ -	- ↓ -	- ↓ -	- ↓ -	- ↓ -
150-160	21.5	21.5	36.06	35.99	NE	10	43	3' chop	partly cloudy
40	17.0	17.0	33.92	33.99	NE	18	19	3' chop	partly cloudy
120	20.0	20.0	36.16	36.09	E-NE	10	- - -	4' sea	90% cloud cover
110	19.0	19.0	36.19	36.14	E-SE	07	48	1' chop	90% cloud cover
37	16.5	17.0	32.80	35.39	E	07	35	1' chop	60% cloud cover
180	21.5	18.5	36.41	36.26	SW	03	90	1' chop	clear
180	22.0	18.5	36.43	36.26	NW	15-20	75	5-6' sea	overcast
120	22.5	20.0	36.30	36.18	SE	03	54	ripple	clear
80	22.0	20.5	35.27	35.90	SE	20	45	4' sea	clear
50	22.0	22.0	35.23	35.16	SE	18	40	5' sea	clear
155	25.0	21.5	36.53	36.18	S	05	90	3' chop	partly cloudy
75	25.5	25.5	36.14	36.14	S	20	- - -	6' sea	cloudy

TABLE 25. POST HC TRAPPING (*Continued*)

Cruise number	Date	Location sta.	lat.	long.	Traps no.	bait	time	Additional gear type	time
	20-21 June 1967	C	27°37'	83°28'	6	bonito	*1730-0940*	---	---
Post HC 40	21-22 June 1967	X	27°42'	84°10'	6	bonito	*1930-1200*	---	---
	22-23 June 1967	X	27°42'	84°10'	4	bonito	*1300-0745*	---	---
	23 June 1967	X	27°42'	84°10'	---	---	---	O	0800-0900
	23-24 June 1967	X	27°58'	83°05'	12	bonito	*1830-0800*	---	---
	11-12 July 1967	D	27°37'	83°58'	6	barracuda	*2000-1100*	---	---
Post HC 41	12-13 July 1967	X	27°48'	84°09'	12	bonito, salted shark meat in plastic bags	*1500-1250*	---	---
	13-14 July 1967	X	27°48'	84°09'	†12	bonito, salted shark (no bags)	*1300-1510*	---	---
	14 July 1967	X	27°48'	84°09'	---	---	---	O	*0845-0945* *1000-1100*
	14-15 July 1967	X	27°40'	83°05'	11	bonito, shark (no bags)	*2045-1120*	---	---
	15 July 1967	X	27°40'	83°05'	---	---	---	O	*0855-0925*
	25-26 August 1967	X	27°51'	84°10'	12	salted shark	*2330-1045*	---	---
Post HC 42	26 August 1967	X	27°51'	84°10'	---	---	---	O	*1050-1150*
	26-27 August 1967	X	28°06'	83°07'	12	salted shark	*2030-1030*	---	---
	27-28 August 1967	X	28°06'	83°07'	12	salted shark	*1930-1000*	---	---
Post HC 43	11-12 September 1967	X	27°37'	83°54'	6	salted shark	*2000-1030*	---	---
	27-28 October 1967	X	27°45'	84°10'	4	mullet	*2130-0815*	---	---
Post HC 44	28-29 October 1967	X	5-6 miles WNW Clearwater		4	mullet	*1715-0930*	---	---
	29-30 October 1967	X	WNW Clearwater		4	mullet	*1230-0830*	---	---
	20-21 November 1967	C	27°37'	83°28'	6	white grunt	1800-0955	---	---
Post HC 45	29-30 November 1967	X	5 miles due W of Clearwater		4	◆	1500- ◆	---	---
	30 Nov. - 1 Dec. 1967	X	-"-		4	◆	◆ -0800	---	---

Depth ft.	Temp. °C sur.	Temp. °C bot.	Salinity o/oo sur.	Salinity o/oo bot.	General Field Observations: Wind dir.	Wind est. vel. K	Secchi ft.	Water condition	Weather
120	27.0	20.5	35.71	36.26	calm	00	100	1' swell	overcast
								1' chop	partly cloudy
150	29.0	20.0	35.58	36.33	NW	08	100	2' chop	partly cloudy
45	28.5	28.5	36.04	36.23	NW	05	35	2' swell	partly cloudy
180	30.0	20.5	33.61	35.91	calm	00	120	1' swell	partly cloudy
150	31.0	20.0	33.27	35.88	SW	03	110	1' chop	partly cloudy
					SW	15	90	4' sea	partly cloudy
66-74	30.0	30.0	35.90	36.06	NW	15	40	4' sea	partly cloudy
150	28.5	22.5	34.88	36.55	calm	00	100	2' chop	partly cloudy
50	29.5	29.5	35.86	35.88	calm	00	42	calm	partly cloudy
160	28.0	21.0	34.76	36.33	NE	18	37	5' sea	partly cloudy
150	23.0	21.0	35.91	36.42	N-NW	3-5	52	1' swell, clear	clear
44	23.5	22.0	34.97	35.05	NE	20	38	3' swell	clear
120	21.0	21.0	36.27	36.29	calm	00	40	calm	partly cloudy
44	20.0	20.0	---	---	calm	00	31	calm	partly cloudy

TABLE 26. DATES OF MOON PHASES DURING PROJECT HOURGLASS

Phase	1965					1966											1967											Phase
	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	
FQ	04	02	02	01	01																							FQ
FM	12	10	10	08	08																							FM
LQ	19	18	17	15	15																							LQ
NM	26	24	24	22	22																							NM
FQ					30																							FQ
FM						07	05	07	05	04	03	02	01															FM
LQ						13	12	14	12	12	11	10	09															LQ
NM						21	20	22	20	20	18	18	16															NM
FQ						29	28	29	28	27	25	24	23															FQ
FM													31															FM
LQ														08	07	05	05	03	01	03	01	01						LQ
NM														14	14	12	12	10	09	11	09	09						NM
FQ														21	21	20	19	18	17	19	17	17						FQ
FM														29	29	28	27	26	24	26	24	23						FM
LQ																						31						LQ
NM																							08	07	06	04	03	02	NM
FQ																							15	14	12	11	10	09	FQ
FM																							22	21	20	18	18	17	FM
LQ																							29	29	28	26	26	25	LQ